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AIRCRAFT FUEL SYSTEMS

AFSC 2A6X4

OSSN 2317

AUGUST 1998

**OCCUPATIONAL ANALYSIS PROGRAM
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION AND TRAINING COMMAND
1550 5TH STREET EAST
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PREFACE

This report presents the results of an Air Force occupational survey of the Aircraft Fuel Systems career ladder, Air Force Specialty Code 2A6X4. Authority for conducting occupational surveys is contained in Air Force Instruction 36-2623. Copies of this report and its associated computer products are distributed to the Air Force career ladder functional manager, the technical training location, all major using commands, and any other interested operations and training officials.

The survey instrument was developed by Second Lieutenant Christopher D. Gilliam, Inventory Development Specialist. Captain Daniel J. Watola, Occupational Analyst, analyzed the data and wrote the final report. This report was approved by Lieutenant Colonel Roger W. Barnes, Chief, Airmen Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS). Mr. Tyrone Hill provided computer programming support and Mr. Richard G. Ramos provided administrative support.

Additional copies of this report can be obtained by writing to AFOMS/OMYXI, 1550 5th Street East, Randolph AFB Texas 78150-4449, or by calling DSN 487-5543. For more information on the Air Force occupational survey program or other on-going projects, visit our web site at <http://www.omsq.af.mil>.

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SUMMARY OF RESULTS

1. **Survey Coverage:** The Air Force Specialty Code (AFSC) 2A6X4, Aircraft Fuel Systems, career ladder was surveyed to obtain occupational data for use in evaluating and revising current career ladder documents and training programs. Survey results are based on the responses of 1,872 specialty personnel, representing 60 percent of the total assigned population (as of January 1998). Three-, 5-, and 7-skill level personnel from all major commands, the Air National Guard, and Air Force Reserve Command are included in this survey.
2. **Career Ladder Structure:** Three clusters and three jobs were identified in the career ladder structure analysis: the Fuel Systems Maintenance Cluster, the Aircraft Preparation Cluster, the Supervisor Cluster, the Mission Support Job, the Quality Assurance Job, and the External Fuel Tank Maintenance Job. The Fuel Systems Maintenance Cluster represents the core job of the career ladder, accounting for 74 percent of the survey sample.
3. **Career Ladder Progression:** The Aircraft Fuel Systems career ladder displays a typical pattern of career progression in that members of the lower skill level (i.e., 3-skill levels) tend to engage in technical duties alone, while members of the upper skill levels (i.e., 5- and 7-skill levels) are characterized by their increasing involvement in management, supervisory, and training functions.
4. **Training Analysis:** A match of occupational survey data to the AFSC 2A6X4 Specialty Training Standard (STS) supported all but two matched STS items, although multiple items are recommended for proficiency code revision and numerous unmatched tasks performed by high percentages of personnel are recommended for inclusion in the STS. A similar analysis of the Aircraft Fuel Systems Apprentice Course (J3ABR2A634-001) Plan of Instruction (POI) found occupational data generally supported matched POI items. However, several items are recommended for deletion and numerous unmatched tasks performed by high percentages of personnel are recommended for inclusion in the POI.
5. **Job Satisfaction Analysis:** Overall, members are content with their jobs. However, job satisfaction is less among 1998 active duty personnel as compared to those surveyed in the 1994 study. Additionally, intentions to reenlist are notably lower for first- and second-enlistment personnel.
6. **Implications:** The career ladder structure was found to be generally stable when compared to the previous study and displays a typical pattern of career progression with personnel transitioning from technical to management, supervisory, and training functions with increasing experience. The training analysis concluded the STS is well supported; the high "perceived use of training" job satisfaction indicator ratings further support this conclusion. Additionally, the training analysis concluded the POI is generally supported, with numerous items identified for review by training personnel as candidates for proficiency code revision. Finally, Aircraft Fuel Systems job satisfaction was found to be good overall.

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**OCCUPATIONAL SURVEY REPORT (OSR)
AIRCRAFT FUEL SYSTEMS CAREER LADDER
(AFSC 2A6X4)**

INTRODUCTION

This report presents the results of an occupational survey of the Aircraft Fuel Systems career ladder, Air Force Specialty Code (AFSC) 2A6X4, conducted by the Occupational Analysis Flight, Air Force Occupational Measurement Squadron. This survey was initiated as part of a 5-year survey cycle; the previous survey was completed in November 1994.

Background

This OSR can assist training personnel in updating technical training programs and career ladder documents. Furthermore, survey data can be reviewed to assess the need for specialized training for major command (MAJCOM) or skill-level groups.

As described in AFMAN 36-2108, *Airman Classification*, 11 March 1998, Specialty Description, dated 30 April 1995, Aircraft Fuel Systems personnel remove, repair, inspect, install, and modify aircraft fuel systems including integral fuel and water tanks, bladder cells, and external tanks. They also maintain hardware and equipment associated with these activities.

In order to be awarded the 3-skill level, candidates must complete the entry-level course, J3ABR2A634-001 Aircraft Fuel Systems Apprentice, taught at Sheppard AFB TX. This 36-day course includes instruction concerning the career field; occupational safety; technical publications; hazardous wastes; maintenance management; supply and equipment management; supervision; training; tools and test equipment; general aircraft maintenance; electrical circuits; engine feed and crossfeed systems; fuel jettison and dump systems; fuel transfer systems; ground refueling and defueling systems; air refueling receiver systems; manifold scavenge and drain systems; tank scavenge systems; pressurization and vent systems; fuel quantity indicating systems; hydrazine maintenance; external fuel tank maintenance; fuel tank entry; integral fuel tank maintenance; and fuel cells.

Entry into this career ladder currently requires an Armed Services Vocational Aptitude Battery score of Mechanical - 51; a strength factor of "J" (Weight lift of 60 lbs); and possession of normal color vision is also required.

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SURVEY METHODOLOGY

Inventory Development

The data collection instrument used for this occupational survey was United States Air Force Job Inventory (JI) Occupational Survey Study Number 2317 (dated January 1998). The JI is a comprehensive list of tasks performed by Aircraft Fuel Systems personnel. In developing the JI, a tentative task list was prepared after reviewing pertinent career ladder publications, directives, and the previous study's JI and OSR. This list was then validated by numerous subject-matter experts located at five operational and training locations. These locations included:

LOCATION	UNIT VISITED
Dyess AFB TX	7 CRS
Hurlburt Field FL	16 CRS
Mountain Home AFB ID	366 CRS
Sheppard AFB TX	361 TRS
Travis AFB CA	60 EMS

The final JI consists of 594 tasks grouped under 15 duty titles. It also contains a number of background questions relating to workforce demographics, duty AFSC (DAFSC), time in present job, total active federal military service (TAFMS), job title, work area assigned, temporary duties, aircraft supported, equipment or resource usage, and job satisfaction.

Survey Administration

From January through May 1998, JIs were administered to all eligible Aircraft Fuel System personnel. Nearly 1,900 active duty, Air National Guard (ANG), and Air Force Reserve Command (AFRC) personnel with DAFSCs 2A634, 2A654, and 2A674 received JIs at 184 installations worldwide. Personnel considered ineligible to participate in this survey included, for example, those transitioning to a permanent change of station, those preparing for retirement at the time of the survey, and those who had not been in their present job for at least 6 weeks.

Eligible respondents were first asked to complete an identification and background information section. In the duty-task section, respondents were asked to review the task list and check all tasks performed in their present job. Checked tasks were then rated on a 9-point "relative time spent" scale. A rating of 1 indicated a very small amount of time was spent on the

task relative to all other checked tasks, whereas a rating of 9 indicated a very large amount of time was spent on the task relative to all other checked tasks. In calculating a relative time spent index for each checked task, the sum of all ratings was assumed to account for 100 percent of the respondent's time on the job. After each respondent's ratings were summed, each individual task's time spent rating was divided by the sum of all ratings. This quotient was then multiplied by 100 to determine the relative percent time spent on each task. This procedure permits a comparison of percent members performing and relative percent time spent on tasks and groups of tasks.

Survey Sample

All returned JIs were monitored to ensure the final survey sample is representative of the populations of MAJCOM or component and paygrade groups. Table 1 lists the percentage distribution of personnel assigned to an active duty MAJCOM, the ANG, or the AFRC as of January 1998. Also shown is the percentage distribution of the final survey sample across these groups. The degree of similarity between the two columns of data reflect the degree to which the final sample adequately represents the total population of assigned members. In general, the percent of assigned and percent of sample pairs are congruent indicating the final survey sample is representative of the population of assigned Aircraft Fuel System personnel. Similarly, Table 2 reveals the final survey sample is representative across paygrades.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs; task factor information is needed for a complete analysis of the career ladder. To obtain task factor data, selected senior noncommissioned officers (NCOs), generally E-6 or E-7 craftsmen, also completed a second booklet for either Training Emphasis (TE) or Task Difficulty (TD). These booklets were processed separately from the JIs. The resulting data are used in a number of different analyses discussed in greater detail elsewhere in this report.

Training Emphasis (TE). TE is a rating of the amount of emphasis that should be placed on a task taught in entry-level training. Fifty-three active duty senior NCOs were asked to select tasks they felt should be taught to entry-level personnel in some form of structured training. Structured training is defined as training provided at resident technical schools, field training detachments, mobile training teams, formal on-the-job training (OJT), or any other organized training method. They indicated, on a scale of 1 "extremely low emphasis" to 9 "extremely high emphasis," how much training emphasis these tasks should receive. The level of agreement among these 53 NCOs was very high. The average TE rating was 2.17 with a standard deviation of 1.64; thus any task with a TE rating of 3.81 or more indicates a high TE.

TABLE 1

DISTRIBUTION OF AFSC 2A6X4 MEMBERS ACROSS MAJOR COMMANDS AND COMPONENTS

MAJOR COMMAND/COMPONENT	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
ACTIVE DUTY**		
Air Combat Command	23	26
Air Mobility Command	11	12
Pacific Air Forces	8	9
United States Air Forces in Europe	6	6
Air Education and Training Command	5	6
Air Force Material Command	3	4
Air Force Special Operations Command	3	1
Other	***	***
AIR NATIONAL GUARD	27	21
AIR FORCE RESERVE COMMAND	14	15
TOTAL ASSIGNED	3,107	
TOTAL SURVEYED	2,893	
TOTAL SAMPLE	1,872	
PERCENT OF ASSIGNED IN SAMPLE	60%	
PERCENT OF SURVEYED IN SAMPLE	65%	

* As of January 1998

** Active duty personnel represent 59 percent of all assigned personnel and 64 percent of the surveyed sample

*** Less than 1 percent

TABLE 2

DISTRIBUTION OF AFSC 2A6X4 MEMBERS ACROSS PAYGRADES

PAYGRADE	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
E-1 - E-3	27	20
E-4	27	22
E-5	24	28
E-6	12	20
E-7	10	10
E-8	**	0
E-9	0	0

* As of January 1997

** Less than 1 percent

Task Difficulty (TD). TD is an estimate of the amount of time needed to learn how to perform a task. The 51 active duty senior NCOs who completed TD booklets were asked to rate the difficulty of each task using a 9-point scale, with descriptors ranging from "extremely low difficulty" to "extremely high difficulty." Interrater reliability was very high. Ratings were standardized such that tasks have an average difficulty of 5.00 and a standard deviation of 1.00; thus, any task with a TD rating of 6.00 or more is considered difficult to learn.

CAREER LADDER STRUCTURE

The structure of jobs in the Aircraft Fuel Systems career ladder is based on the responses of job incumbents. Each individual in the sample performs a set of tasks called a *Job*. A hierarchical grouping program, which is part of the Comprehensive Occupational Data Analysis Program, creates an individual job description for each respondent using the tasks performed and the average relative time spent on each task. It then compares each individual's job description to every other incumbent's job description, locating the two most similar job descriptions and combining them to form a group job description. In successive iterations, the program adds new members to the initial group or forms new groups if the job descriptions become too dissimilar. If there is a substantial degree of similarity between two or more group job descriptions, the program may combine these jobs in a *Cluster*. The jobs and clusters resulting from this hierarchical grouping program define the structure of the career ladder.

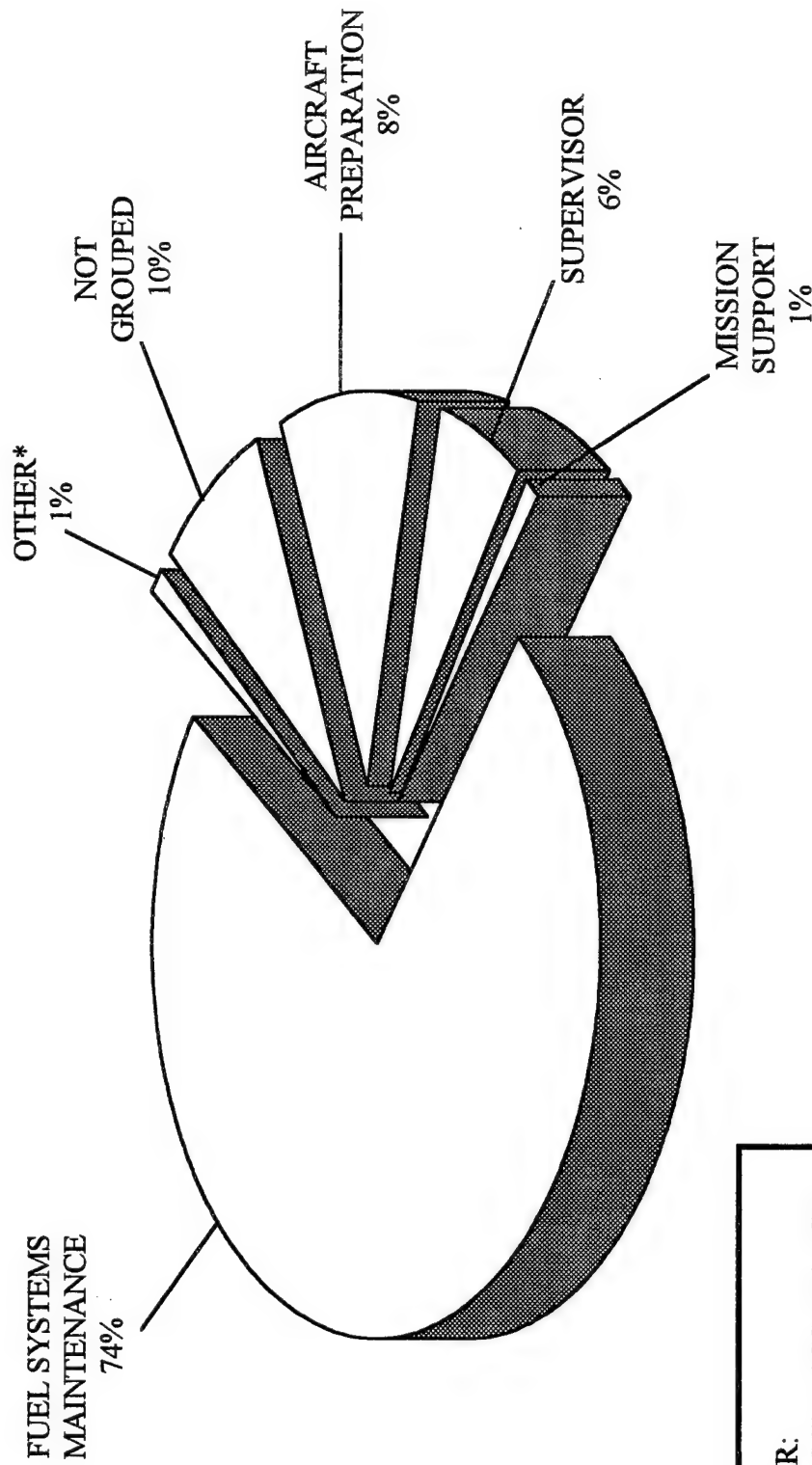
Structure Overview

After a careful analysis of the occupational data, three clusters and three jobs were identified. These jobs are listed below, graphically depicted in Figure 1, and described in detail in succeeding paragraphs. The stage number (ST) beside the title is a computer-generated code number which can be used to reference related data found in the study archives. The sample number (N) reports the number of members within the group. The following results can be used to identify tasks that are specific to the job, distinguish tasks that are obsolete or not widely performed, and determine training needs for incumbents.

- I. FUEL SYSTEMS MAINTENANCE CLUSTER (ST116, N=1,393)
- II. AIRCRAFT PREPARATION CLUSTER (ST113, N=152)
- III. SUPERVISOR CLUSTER (ST047, N=118)
- IV. MISSION SUPPORT JOB (ST107, N=10)
- V. QUALITY ASSURANCE JOB (ST150, N=7)

AFSC 2A6X4 AIRCRAFT FUEL SYSTEMS JOBS

(N=1,872)



*OTHER:
QUALITY ASSURANCE
EXTERNAL FUEL TANK
MAINTENANCE

FIGURE 1

VI. EXTERNAL FUEL TANK MAINTENANCE JOB (ST135, N=6)

The Aircraft Fuel Systems personnel forming these job groups account for 90 percent of the survey sample; the remaining 10 percent are classified as "not grouped." Nearly all of these 186 ungrouped members described their job title as "Fuel Systems Mechanic." However, a minority of these personnel described their job title as "Instructor" or "Unit Deployment Manager." Due to differences in the tasks they perform relative to grouped members, ungrouped members could not be clearly identified with any one job group.

Two tables in this section provide background information about these job groups. Table 3 displays selected background information including group size, DAFSC, component status, predominant paygrade, average TAFMS, average number of tasks performed, and percentage of members supervising. Table 4 depicts the average relative time spent by members of each cluster or job across each of the career ladder's 15 duties. Additionally, a list of representative tasks performed by members of each job group is provided in Appendix A.

Job Descriptions

I. FUEL SYSTEMS MAINTENANCE CLUSTER (ST116). This cluster of 1,393 members, or 74 percent of the survey sample, represents the core job of the Aircraft Fuel Systems career ladder. The personnel comprising this group spend the majority of their time troubleshooting aircraft fuel systems (16 percent), removing and installing aircraft fuel systems components (15 percent), inspecting aircraft fuel systems (13 percent), and preparing aircraft for fuel systems maintenance (13 percent). While the vast majority of members perform these duties on the flightline or in back shops, 10 members perform their duties at service depots. Overall, members perform an average of 183 tasks, the largest number of tasks performed by any identified job group, with 104 tasks accounting for 50 percent of their time. Tasks performed by these personnel include:

- ground equipment
- depuddle fuel tanks or cells
- bond equipment
- operationally check crossfeed or engine-feed systems
- review aircraft maintenance forms for deficiencies
- isolate malfunctions of crossfeed or engine-feed systems
- check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained
- operationally check transfer systems
- isolate malfunctions of vent systems
- interpret aircraft fuel system schematics

TABLE 3

SELECTED BACKGROUND DATA FOR AFSC 2A6X4 JOBS

	FUEL SYSTEMS MAINTENANCE (ST116)	AIRCRAFT PREPARATION (ST113)	SUPERVISOR (ST047)	MISSION SUPPORT (ST107)	QUALITY ASSURANCE (ST150)	EXTERNAL TANK MAINTENANCE (ST135)
GROUP SIZE	1,393	152	118	10	7	6
PERCENT OF SAMPLE	74%	8%	6%	1%	*	*
PERCENT IN CONUS	83%	89%	73%	40%	57%	83%
DAFSC DISTRIBUTION (PERCENT):						
2A634	20%	43%	0%	30%	0%	33%
2A654	57%	51%	14%	30%	29%	67%
2A674	23%	6%	86%	40%	71%	0%
COMPONENT STATUS (PERCENT):						
ACTIVE DUTY	61%	55%	88%	100%	100%	83%
AIR NATIONAL GUARD	22%	27%	3%	0%	0%	0%
AIR FORCE RESERVE	17%	18%	9%	0%	0%	17%
COMMAND						
PREDOMINANT PAYGRADE(S)						
AVERAGE TAFMS IN MONTHS (ACTIVE DUTY ONLY)	E-3 to E-6 107	E-2 to E-5 71	E-7 199	E-3 to E-7 131	E-5 171	E-5 81
PERCENT IN FIRST-ENLISTMENT (ACTIVE DUTY ONLY)	31%	50%	1%	30%	0%	34%
AVERAGE NUMBER OF TASKS PERFORMED						
PERCENT SUPERVISING	183	70	119	49	59	94
	44%	9%	88%	50%	29%	50%

* Less than 1 percent

TABLE 4

TIME SPENT ON DUTIES ACROSS AFSC 2A6X4 JOB GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	FUEL SYSTEMS MAINTENANCE (ST116)	AIRCRAFT PREPARATION (ST113)	SUPERVISOR (ST047)
A. PERFORMING SUPPORT ACTIVITIES	10	16	5
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	13	27	3
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	16	12	3
D. INSPECTING AIRCRAFT FUEL SYSTEMS	13	6	4
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	15	17	2
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3	3	*
G. REPAIRING INTEGRAL FUEL TANKS	8	12	1
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*	0
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	3	2	1
J. PERFORMING MOBILITY ACTIVITIES	2	1	3
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	5	2	10
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	5	*	50
M. PERFORMING TRAINING ACTIVITIES	2	*	8
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1	*	5
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	1	4

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 4 (CONTINUED)

TIME SPENT ON DUTIES ACROSS AFSC 2A6X4 JOB GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	MISSION SUPPORT (ST107)	QUALITY ASSURANCE (ST150)	EXTERNAL TANK MAINTENANCE (ST135)
A. PERFORMING SUPPORT ACTIVITIES	22	2	20
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	4	3	10
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	*	*	5
D. INSPECTING AIRCRAFT FUEL SYSTEMS	1	58	13
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	1	1	14
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	0	*	1
G. REPAIRING INTEGRAL FUEL TANKS	*	0	5
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	0	0	0
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	*	5	2
J. PERFORMING MOBILITY ACTIVITIES	2	1	*
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	10	3	13
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	13	18	8
M. PERFORMING TRAINING ACTIVITIES	2	3	4
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	7	4	1
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	35	1	3

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

A majority of personnel in this cluster are 5-skill level (57 percent), with the remaining members divided between the 7- and 3-skill levels (23 and 20 percent respectively). While most incumbents are active duty (61 percent), a large portion of them are AFRC (22 percent) and ANG (17 percent) personnel. Fuel Systems Maintenance members typically hold the ranks of E-3 through E-6, with an average of 107 months TAFMS. Thirty-one percent of these members are in their first-enlistment and 44 percent are supervising others.

II. AIRCRAFT PREPARATION CLUSTER (ST113). As the second largest job group, the 152 members of this cluster account for 8 percent of the survey sample. These personnel spend their time preparing aircraft for fuel systems maintenance (27 percent), removing and installing aircraft fuel systems components (17 percent), performing support activities (16 percent), troubleshooting aircraft fuel systems (12 percent), and repairing integral fuel tanks (12 percent). While members spend their time engaged in duties that are similar to those found in the core job group, it is the amount of time they spend in aircraft preparation activities that distinguish them from their Fuel Systems Maintenance counterparts (27 percent versus 13 percent). Of the 152 Aircraft Preparation personnel, 23 members can be distinguished from their peers based on the amount of time they spend engaged in hydrazine-related tasks. Overall, personnel perform an average of 70 tasks, of which 47 account for 50 percent of their job time. The generalized nature of this cluster is exemplified by the following list of tasks frequently performed by members:

- bond equipment
- clean work areas
- depuddle fuel tanks or cells
- ground equipment
- purge fuel tanks or cells using blow purge method
- drain fuel tanks or cells
- rope off fuel system repair areas
- test atmosphere of fuel tanks or cells for fire safe or health safe conditions
- connect or disconnect wiggins-type, wig-o-flex, or minimal-type fittings
- notify fire departments of fuel systems maintenance

Over one-half of the personnel in this cluster are 5-skill level (51 percent), 43 percent are 3-skill level, and just 6 percent are 7-skill level. The E-2 through E-5 paygrades predominate among these members, who possess an average TAFMS of 70 months. Fifty percent of these airmen are in their first-enlistment and just 9 percent are supervising at least one other member. Compared to the other identified job groups, Aircraft Preparation personnel hold more 3-skill levels, have among the lowest paygrades, possess the lowest average TAFMS, have a 50 percent probability of being in their first enlistment, and are least likely to be supervising others.

III. SUPERVISOR CLUSTER (ST047). This cluster consists of 118 members and accounts for 6 percent of the survey sample. These personnel perform tasks primarily related to management and supervisory activities (50 percent), Core Automated Maintenance System (CAMS) activities (10 percent), and training activities (8 percent). The vast majority of members are "front-line" supervisors who perform a number of technical duties while supervising one or more technicians. However, a minority of supervisors can be classified as "dedicated" supervisors who do not engage in technical duties, CAMS operators who manage fuel systems maintenance, and instructors who provide structured training. Among the average 119 tasks performed by these personnel, 61 tasks account for 50 percent of their time. The top 10 tasks performed by the members of this cluster include:

- supervise military personnel
- conduct self-inspections or self-assessments
- counsel subordinates concerning personal matters
- inspect personnel for compliance with military standards
- conduct supervisory performance feedback sessions
- evaluate personnel for compliance with performance standards
- conduct safety inspections of equipment or facilities
- write recommendations for awards or decorations
- conduct general meetings, such as staff meetings, briefings, conferences, or workshops
- determine or establish work assignments or priorities

As is true in most other career ladders, the role of the supervisor is filled by experienced personnel. Fully 86 percent of these members hold the 7-skill level, with the remaining 14 percent holding the 5-skill level. The predominant paygrade is E-7, with these incumbents possessing the highest average TAFMS of all of the identified job groups (199 months). Many CAMS operators supervise work scheduling rather than personnel, which explains the 1 percent of members in their first-enlistment and the 12 percent of members who do not supervise others.

IV. MISSION SUPPORT JOB (ST107). This job consists of 10 airmen accounting for just 1 percent of the survey sample. The members of this job group spend the majority of their time performing general supply and equipment activities (35 percent), performing support activities (22 percent), performing management and supervisory activities (13 percent), and performing CAMS activities (10 percent). Mission Support personnel are distinguished from the members of other identified job groups based on the higher amount of time they spend engaged in supply, equipment, and support activities. On average, these airmen perform just 49 tasks, the smallest number of tasks performed by any identified job group, with 25 of these tasks accounting for 50 percent of their time. Tasks performed by Mission Support personnel include:

- coordinate supply-related matters with appropriate agencies
- inventory equipment, tools, parts, or supplies
- store equipment, tools, parts, or supplies, other than for mobility
- identify and report equipment or supply problems
- initiate requisitions for equipment, tools, parts, or supplies
- initiate documentation to turn in excess or surplus property
- maintain precision measurement equipment (PME) calibration schedules
- maintain documentation on items requiring periodic inspections
- evaluate serviceability of equipment, tools, parts, or supplies
- coordinate maintenance of equipment with appropriate agencies

Forty percent of these members hold the 7-skill level, with the remainder evenly split between the 3- and 5-skill levels. Typically, these incumbents hold the ranks of E-3 through E-7, with an average TAFMS of 131 months. While 30 percent of these members are in their first-enlistment, 50 percent are supervisors. All 118 Mission Support members are active duty personnel.

V. QUALITY ASSURANCE JOB (ST150). This job consists of just 7 personnel accounting for less than 1 percent of the survey sample. These airmen spend most of their time inspecting aircraft fuel systems (58 percent) and performing management and supervisory activities (18 percent). They perform an average of 59 tasks, 31 of which account for over 50 percent of their time spent on the job. The top 10 tasks performed by the members of this job include:

- inspect installed aircraft defueling system components
- inspect cavities
- inspect external jettisonable fuel tank components
- inspect installed crossfeed system components
- inspect installed fuel quantity indicating system components
- inspect installed engine-feed system components
- inspect installed fuel transfer indicating system components
- inspect installed pressurization system components
- inspect installed receiver aircraft air refueling system components
- inspect removed engine-feed system components

Like the Supervisor Cluster, members of the Quality Assurance (QA) Job are relatively experienced; no members are in their first enlistment. Incumbents maintain either the 7- or the 5-skill level (71 and 29 percent respectively), predominately hold the E-5 paygrade, and possess an average TAFMS of 171 months. Twenty-nine percent of QA personnel are supervisors and all members are serving on active duty.

VI. EXTERNAL FUEL TANK MAINTENANCE JOB (ST135). This job consists of just 6 members accounting for less than 1 percent of the survey sample. These personnel spend the majority of their time performing support activities (20 percent), removing and installing aircraft fuel systems components (14 percent), inspecting aircraft fuel systems (13 percent), and preparing aircraft for fuel systems maintenance (10 percent). They perform an average of 94 tasks, with 46 tasks accounting for 50 percent of their time spent on the job. The specialized nature of this job is exemplified by the following list of tasks frequently performed by members:

- maintain external fuel tank storage areas (tank farms)
- prepare external jettisonable fuel tanks for tank farms
- perform pressure checks on external jettisonable fuel tanks
- inspect external jettisonable fuel tanks, other than dash six inspections
- remove or install external tank nosecones or tailcones
- remove or install external jettisonable fuel tank components
- issue or receive external fuel tanks
- inspect external jettisonable fuel tank components
- remove or install externally mounted aircraft fuel quantity probes
- perform dash six inspections on jettisonable fuel tanks

Two-thirds of these incumbents hold the 5-skill level, while the remaining one-third hold the 3-skill level. These airmen are primarily E-5s, with an average TAFMS of 81 months. Fifty percent of members are supervisors and 34 percent are in their first-enlistment. No External Tank Maintenance personnel are guardsmen.

Comparison of Current Survey to Previous Survey

The results of this career ladder structure analysis were compared to those of the previous analysis published in November 1994. As indicated in Table 5, all of the job groups identified in this analysis were identified in the previous analysis; four jobs identified in the previous analysis were not identified in this analysis. However, this does not suggest that these four unidentified jobs are no longer being performed. Rather, the personnel performing these functions have been associated with other identified jobs. For example, the previous study's Shop or Shift Chief and CAMS personnel are presently included in the Supervisor Cluster.

TABLE 5

COMPARISON OF CURRENT AND PREVIOUS STUDY JOB GROUPS

1998 AFSC 2A6X4 STUDY (N=1,872)	1994 AFSC 2A6X4 STUDY (N=1,145)
FUEL SYSTEMS MAINTENANCE	FUEL SYSTEMS MAINTENANCE
AIRCRAFT PREPARATION	AIRCRAFT PREPARATION
SUPERVISOR	SUPERVISOR
MISSION SUPPORT	MISSION SUPPORT
QUALITY ASSURANCE	QUALITY ASSURANCE
EXTERNAL TANK MAINTENANCE	EXTERNAL TANK MAINTENANCE
(NOT IDENTIFIED)	SHOP OR SHIFT CHIEF
(NOT IDENTIFIED)	CROSS UTILIZATION TRAINING (CUT)
(NOT IDENTIFIED)	MOBILITY
(NOT IDENTIFIED)	CORE AUTOMATED MAINTENANCE SYSTEM (CAMS)

Summary

Overall, comparisons of the 1998 and 1994 job structures indicate that the Aircraft Fuel Systems career ladder has remained fairly stable over time. While fewer job groups were identified in the current study, they comprise personnel performing all of the functions identified in the previous study.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with an analysis of the career ladder structure, is an integral part of an occupational survey. A DAFSC analysis identifies similarities and differences in task and duty performance at various skill levels. This information may be used to evaluate how well career ladder documents such as AFMAN 36-2108 *Airman Classification*, the Career Field Education and Training Plan, and the Specialty Training Standard (STS) reflect what is being accomplished in the field.

This analysis has been divided into active duty, ANG, and AFRC sections. Table 6 depicts the distribution of active duty, ANG, and AFRC skill level groups across Aircraft Fuel Systems jobs. The table reveals most personnel, regardless of component or skill level, are assigned to the Fuel Systems Maintenance core job. In general, as active duty members achieve higher skill levels, they are assigned to a greater variety of jobs in the career ladder, especially those involving management, supervisory, and training functions. At the 7-skill level, fully 37 percent of all active duty personnel are supervisors. Thus, a typical pattern of career ladder progression is present among active duty members. Three-skill level personnel begin in technical jobs performing technical tasks, 5-skill level members continue to perform technical tasks, but also engage in limited supervisory and training functions, and 7-skill level personnel spend more time managing or supervising and less time engaged in technical tasks as compared to 5-skill level members. On the other hand, ANG and AFRC members, regardless of skill level, tend to specialize in Fuel Systems Maintenance and Aircraft Preparation, rather than transition into other jobs.

Active Duty Skill-Level Descriptions

DAFSC 2A634. These 384 active duty 3-skill level personnel represent 21 percent of the survey sample. Table 7 shows these airmen spend the majority of their time preparing aircraft for fuel systems maintenance (19 percent), removing and installing aircraft fuel systems components (17 percent), troubleshooting aircraft fuel systems (16 percent), and performing support activities (13 percent). As shown in Table 8, members generally perform technical tasks related to these duties. Seventy percent of personnel are assigned to the Fuel Systems Maintenance Cluster and 16 percent are assigned to the Aircraft Preparation Cluster.

TABLE 6

DISTRIBUTION OF AFSC 2A6X4 ACTIVE DUTY, AIR NATIONAL GUARD, AND AIR FORCE RESERVE COMMAND
SKILL LEVEL GROUPS ACROSS JOBS
(PERCENTAGE OF SUBSAMPLE)

JOB	2A634		2A654		2A674			
	ACTIVE (N=384)	AFRC (N=12)	ACTIVE (N=580)	ANG (N=252)	AFRC (N=158)	ACTIVE (N=238)	ANG (N=132)	AFRC (N=116)
FUEL SYSTEMS MAINTENANCE CLUSTER	70	67	84	73	82	42	93	80
AIRCRAFT PREPARATION CLUSTER	16	25	3	16	11	*	1	6
SUPERVISOR CLUSTER	0	0	3	0	1	37	3	8
MISSION SUPPORT JOB	1	0	1	0	0	2	0	0
QUALITY ASSURANCE JOB	0	0	*	0	0	2	0	0
EXTERNAL TANK MAINTENANCE JOB	1	0	1	0	1	0	0	0
NOT GROUPED	12	8	8	11	5	17	3	6

*Less than 1 percent

TABLE 7

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS ACTIVE DUTY SKILL LEVEL GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	2A634 (N=384)	2A654 (N=580)	2A674 (N=238)
A. PERFORMING SUPPORT ACTIVITIES	13	10	6
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	19	13	6
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	16	15	8
D. INSPECTING AIRCRAFT FUEL SYSTEMS	9	12	10
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	17	14	6
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3	3	1
G. REPAIRING INTEGRAL FUEL TANKS	9	8	3
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	2	2	1
J. PERFORMING MOBILITY ACTIVITIES	1	2	3
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	4	7	8
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	*	7	35
M. PERFORMING TRAINING ACTIVITIES	*	3	5
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1	1	4
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	3	4

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY DAFSC 2A634 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A634 (N=384)
B44	Bond equipment	93
A8	Clean work areas	91
B55	Ground equipment	88
B63	Purge fuel tanks or cells using blow purge method	87
B50	Depuddle fuel tanks or cells	84
B59	Notify fire departments of fuel systems maintenance	84
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	83
B69	Rope off fuel system repair areas	83
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	82
E197	Remove or install boost pumps	82
E182	Connect or disconnect B-nut-type fittings	80
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	80
G304	Mix sealants by hand	79
G285	Apply adhesion promoters prior to applying sealants	79
B54	Drain fuel tanks or cells	78
B62	Pull circuit breakers	78
A10	Contain fuel spills	78
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	76
E229	Remove or install integral tank or fuel cell access doors	76
B60	Position drip pans	76
B61	Position fire extinguishers	75
B68	Review aircraft maintenance forms for deficiencies	73
G305	Mix sealants using machines	73
E232	Remove or install internally mounted fuel quantity probes	73
C91	Localize fuel leak exits	72
B64	Purge fuel tanks or cells using exhaust purge method	69
C94	Operationally check crossfeed or engine-feed systems	69
C103	Operationally check transfer systems	68
B56	Inspect aircraft for presence of chocks or moorings	68

DAFSC 2A654. These 580 active duty 5-skill level members account for 31 percent of the survey sample. According to Table 7, the members of this group spend a large portion of their time troubleshooting aircraft fuel systems (15 percent), removing and installing aircraft fuel systems components (14 percent), preparing aircraft for fuel systems maintenance (13 percent), inspecting aircraft fuel systems (12 percent), and performing support activities (10 percent). Table 9 reveals the technical tasks they perform are similar to those performed by their 3-skill level counterparts. However, 5-skill level incumbents do not specialize in technical tasks alone; 10 percent of their time is spent engaged in supervisory and training activities. Thus, while 84 percent of members are assigned to the Fuel Systems Maintenance Cluster (see Table 6), 3 percent are assigned to the Supervisor Cluster. Table 10 shows a higher percentage of 5-skill level members perform supervisory and training tasks as compared to 3-skill level members, reflecting the beginning of a shift from primarily technical functions to some supervisory functions with increasing skill level.

DAFSC 2A674. These 238 active duty 7-skill level personnel account for 13 percent of the survey sample. These members spend the majority of their time performing management and supervisory activities (35 percent), inspecting aircraft fuel systems (10 percent), troubleshooting aircraft fuel systems (8 percent), and performing CAMS activities (8 percent) (see Table 7). While 42 percent of these airmen are assigned to the Fuel Systems Maintenance Cluster, 37 percent are assigned to the Supervisor Cluster. Table 11 shows the 7-skill level's focus on supervisory and management tasks without neglecting their technical duties. Table 12 highlights 7-skill level members' increasing responsibility, as a higher percentage of members are performing various supervisory tasks as compared to their 5-skill level counterparts.

Air National Guard Skill-Level Descriptions

DAFSC 2A654. These 252 ANG 5-skill level airmen represent 13 percent of the survey sample. According to Table 13, these members spend the majority of their time preparing aircraft for fuel systems maintenance (17 percent), removing and installing aircraft fuel systems components (16 percent), troubleshooting aircraft fuel systems (15 percent), performing support activities (14 percent), and inspecting aircraft fuel systems (12 percent). Table 14 provides a list of the primarily technical tasks performed by 5-skill level guardsmen. These personnel are assigned to the Fuel Systems Maintenance and Aircraft Preparation clusters (73 and 16 percent, respectively).

DAFSC 2A674. These 132 ANG 7-skill level personnel comprise 7 percent of the survey sample. These airmen spend a large portion of their time performing the same five technical duties as their 5-skill level counterparts (see Table 13). The list of representative tasks performed by these members reveals the technical nature of the job (see Table 15). However, as seen with other experienced incumbents, 7-skill level guardsmen allocate more time to management, supervisory, and training activities (about 12 percent of their time) than 5-skill level guardsmen. The list of

TABLE 9

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY DAFSC 2A654 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A653 (N=580)
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	89
A8	Clean work areas	89
B44	Bond equipment	88
B68	Review aircraft maintenance forms for deficiencies	87
B55	Ground equipment	86
B59	Notify fire departments of fuel systems maintenance	84
B50	Depuddle fuel tanks or cells	84
C91	Localize fuel leak exits	84
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	84
G285	Apply adhesion promoters prior to applying sealants	84
G304	Mix sealants by hand	83
C94	Operationally check crossfeed or engine-feed systems	83
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	82
E197	Remove or install boost pumps	82
C80	Isolate malfunctions of crossfeed or engine-feed systems	82
B63	Purge fuel tanks or cells using blow purge method	82
B69	Rope off fuel system repair areas	81
E182	Connect or disconnect B-nut-type fittings	80
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	80
B53	Don or doff respirators	79
C103	Operationally check transfer systems	79
C73	Interpret aircraft fuel system schematics	79
C90	Isolate malfunctions of vent systems	78
B54	Drain fuel tanks or cells	78
A10	Contain fuel spills	78
D133	Inspect applied sealants	77
E229	Remove or install integral tank or fuel cell access doors	77
A25	Operate maintenance dispatch vehicles	77
B56	Inspect aircraft for presence of chocks or moorings	77

TABLE 10

TASKS WHICH BEST DIFFERENTIATE BETWEEN ACTIVE DUTY DAFSC 2A634 AND 2A654 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	2A634 (N=384)	2A654 (N=580)	DIFFERENCE
M540 Evaluate progress of trainees	1	33	-32
M542 Maintain training records or files	9	40	-31
L449 Conduct self-inspections or self-assessments	5	35	-30
L520 Write recommendations for awards or decorations	1	28	-28
M536 Evaluate personnel to determine training needs	1	30	-28
L513 Schedule work assignments or priorities	*	24	-24
D173 Inspect vent system components	44	68	-24
L453 Conduct supervisory orientations for newly assigned personnel	1	23	-23
K438 Perform CAMS interface with base supply systems	21	44	-23
D147 Inspect installed fuel quantity indicating system components	51	74	-23

* Less than 1 percent

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY DAFSC 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A674 (N=238)
L515	Supervise military personnel	83
L451	Conduct supervisory performance feedback sessions	81
L455	Counsel subordinates concerning personal matters	77
L449	Conduct self-inspections or self-assessments	74
L452	Conduct safety inspections of equipment or facilities	74
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	73
L520	Write recommendations for awards or decorations	72
L518	Write performance reports or supervisory appraisals	71
L445	Assign personnel to work areas or duty positions	71
L498	Inspect personnel for compliance with military standards	69
L459	Determine or establish work assignments or priorities	68
L486	Evaluate personnel for compliance with performance standards	68
L502	Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	66
L499	Interpret policies, directives, or procedures for subordinates	64
L476	Establish performance standards for subordinates	63
L464	Develop or establish work methods or procedures	61
K411	Access core automated maintenance system (CAMS) menus and data screens	61
D146	Inspect installed engine-feed system components	61
B68	Review aircraft maintenance forms for deficiencies	60
D178	Perform in-process inspections (IPIs)	60
D133	Inspect applied sealants	60
C73	Interpret aircraft fuel system schematics	59
L448	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	58
D156	Inspect integral tanks	58
L453	Conduct supervisory orientations for newly assigned personnel	58
L487	Evaluate personnel for promotion, demotion, reclassification, or special awards	58
L489	Evaluate work schedules	58
D145	Inspect installed crossfeed system components	57

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN ACTIVE DUTY DAFSC 2A654 AND 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	2A654 (N=580)	2A674 (N=238)	DIFFERENCE
B50 Depuddle fuel tanks or cells	84	44	41
A8 Clean work areas	89	51	38
B44 Bond equipment	88	51	37
E232 Remove or install internally mounted fuel quantity probes	71	35	36
E186 Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	80	44	36
G304 Mix sealants by hand	83	47	36
B54 Drain fuel tanks or cells	78	42	36
A6 Clean or lubricate handtools or special tools	70	36	35
L489 Evaluate work schedules	12	58	-46
L448 Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	13	58	-45
L502 Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	21	66	-45
L520 Write recommendations for awards or decorations	28	72	-44
L451 Conduct supervisory performance feedback sessions	40	81	-41
L499 Interpret policies, directives, or procedures for subordinates	24	64	-41
L449 Conduct self-inspections or self-assessments	35	74	-39
L511 Schedule personnel for temporary duty (TDY) assignments, leaves, or passes	8	47	-39

* Less than 1 percent

TABLE 13

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS AIR NATIONAL GUARD SKILL LEVEL GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	2A654 (N=252)	2A674 (N=132)
A. PERFORMING SUPPORT ACTIVITIES	14	10
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	17	11
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	15	13
D. INSPECTING AIRCRAFT FUEL SYSTEMS	12	12
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	16	12
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	4	4
G. REPAIRING INTEGRAL FUEL TANKS	9	7
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	4	4
J. PERFORMING MOBILITY ACTIVITIES	2	3
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	3	7
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1	8
M. PERFORMING TRAINING ACTIVITIES	1	4
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1	2
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	2	4

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 14

REPRESENTATIVE TASKS PERFORMED BY AIR NATIONAL GUARD DAFSC 2A654 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A654 (N=252)
B55	Ground equipment	93
A8	Clean work areas	91
B50	Depuddle fuel tanks or cells	91
B44	Bond equipment	90
B54	Drain fuel tanks or cells	89
C91	Localize fuel leak exits	86
E197	Remove or install boost pumps	85
B69	Rope off fuel system repair areas	84
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	83
A10	Contain fuel spills	81
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	80
E182	Connect or disconnect B-nut-type fittings	80
G285	Apply adhesion promoters prior to applying sealants	80
G305	Mix sealants using machines	80
G291	Clean damaged sealant areas	79
B52	Disconnect batteries	78
B63	Purge fuel tanks or cells using blow purge method	77
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	77
E229	Remove or install integral tank or fuel cell access doors	76
A6	Clean or lubricate handtools or special tools	76
B66	Remove or install closure panels	76
B64	Purge fuel tanks or cells using exhaust purge method	76
B62	Pull circuit breakers	76
D133	Inspect applied sealants	75
C73	Interpret aircraft fuel system schematics	74
C94	Operationally check crossfeed or engine-feed systems	73
B60	Position drip pans	72
B61	Position fire extinguishers	72
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	72

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY AIR NATIONAL GUARD DAFSC 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A674 (N=132)
A8	Clean work areas	95
B55	Ground equipment	95
B50	Depuddle fuel tanks or cells	95
B54	Drain fuel tanks or cells	94
E182	Connect or disconnect B-nut-type fittings	93
E197	Remove or install boost pumps	93
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	92
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	92
C91	Localize fuel leak exits	92
B44	Bond equipment	92
C73	Interpret aircraft fuel system schematics	92
B59	Notify fire departments of fuel systems maintenance	92
G285	Apply adhesion promoters prior to applying sealants	92
G305	Mix sealants using machines	91
C103	Operationally check transfer systems	91
C90	Isolate malfunctions of vent systems	91
B69	Rope off fuel system repair areas	90
B53	Don or doff respirators	90
G291	Clean damaged sealant areas	90
D156	Inspect integral tanks	89
B68	Review aircraft maintenance forms for deficiencies	89
D133	Inspect applied sealants	88
G292	Clean integral fuel tanks	88
A40	Serve as safety observer for tank entry personnel	87
B62	Pull circuit breakers	87
C80	Isolate malfunctions of crossfeed or engine-feed systems	87
D145	Inspect installed crossfeed system components	87
G304	Mix sealants by hand	87
C94	Operationally check crossfeed or engine-feed systems	86
D146	Inspect installed engine-feed system components	86
E229	Remove or install integral tank or fuel cell access doors	86

tasks that best differentiate between 5- and 7-skill level guardsmen are generally concerned with supervision and training, with a greater percentage of 7-skill level guardsmen performing related tasks than 5-skill level guardsmen (see Table 16).

Air Force Reserve Command Skill-Level Descriptions

DAFSC 2A634. These 12 AFRC 3-skill level personnel represent just 1 percent of the survey sample. Table 17 shows these airmen spend the majority of their time performing support activities (21 percent), preparing aircraft for fuel systems maintenance (20 percent), troubleshooting aircraft fuel systems (17 percent), removing and installing aircraft fuel systems components (12 percent), and repairing integral fuel tanks (10 percent). As shown in Table 18, members generally perform technical tasks related to these duties. Sixty-seven percent of personnel are assigned to the Fuel Systems Maintenance Cluster and 25 percent are assigned to the Aircraft Preparation Cluster (see Table 6).

DAFSC 2A654. These 158 AFRC 5-skill level members account for 8 percent of the survey sample. According to Table 17, the members of this group spend most of their time troubleshooting aircraft fuel systems (16 percent), preparing aircraft for fuel systems maintenance (15 percent), removing and installing aircraft fuel systems components (15 percent), inspecting aircraft fuel systems, performing support activities (11 percent), and repairing integral fuel tanks (10 percent). Their job description is quite similar to that of the 3-skill level reservist. A comparison of representative task lists for the two groups (Tables 18 and 19) reveal that the tasks performed by the two groups are comparable. However, like their active duty counterparts, these 5-skill level reservists differ from their 3-skill level associates by engaging in limited supervisory and training activities (about 5 percent of their time) (see Table 17). Table 20 shows a higher percentage of 3-skill level reservists engage in technical tasks, while a higher percentage of 5-skill level reservists perform tasks related to training and CAMS.

DAFSC 2A674. These 116 AFRC 7-skill level personnel account for 6 percent of the survey sample. These members spend the majority of their time preparing aircraft for fuel systems maintenance (14 percent), troubleshooting aircraft fuel systems (13 percent), removing and installing aircraft fuel systems components (13 percent), performing management and supervisory activities (12 percent), and inspecting aircraft fuel systems (11 percent) (see Table 17). As shown in Table 21, the technical nature of their job is reflected in the tasks they perform. However, Table 17 also shows 17 percent of their time is spent performing supervisory and training activities. Table 22 highlights 7-skill level members' increasing responsibility, as a higher percentage of members are performing various supervisory and training tasks as compared to their 5-skill level counterparts.

TABLE 16

TASKS WHICH BEST DIFFERENTIATE BETWEEN AIR NATIONAL GUARD DAFSC 2A654 AND 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	2A654 (N=252)	2A674 (N=132)	DIFFERENCE
L515 Supervise military personnel	16	66	-50
M542 Maintain training records or files	9	59	-50
M527 Conduct OJT	23	72	-49
M529 Counsel trainees on training progress	8	56	-48
L445 Assign personnel to work areas or duty positions	13	58	-46
K434 Perform CAMS inquiries for aircraft maintenance discrepancies, such as scheduled, deferred, or unscheduled	33	78	-45
M536 Evaluate personnel to determine training needs	8	52	-44
K420 Clear or close out completed aircraft maintenance discrepancies in CAMS	39	83	-44
M547 Schedule training	6	48	-43
O586 Initiate requisitions for equipment, tools, parts, or supplies	14	57	-43

* Less than 1 percent

TABLE 17

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS AIR FORCE RESERVE COMMAND SKILL LEVEL GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	2A634 (N=12)	2A654 (N=158)	2A674 (N=116)
A. PERFORMING SUPPORT ACTIVITIES	21	11	9
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	20	15	14
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	17	16	13
D. INSPECTING AIRCRAFT FUEL SYSTEMS	9	12	11
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	12	15	13
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	2	4	3
G. REPAIRING INTEGRAL FUEL TANKS	10	10	8
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	5	3	3
J. PERFORMING MOBILITY ACTIVITIES	1	2	2
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	2	3	4
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	0	3	12
M. PERFORMING TRAINING ACTIVITIES	*	2	5
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	*	1	1
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	1	3	3

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 18

REPRESENTATIVE TASKS PERFORMED BY AIR FORCE RESERVE COMMAND
DAFSC 2A634 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A634 (N=12)
A8	Clean work areas	100
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	83
B44	Bond equipment	83
B55	Ground equipment	83
B54	Drain fuel tanks or cells	83
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	83
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	83
G285	Apply adhesion promoters prior to applying sealants	83
B50	Depuddle fuel tanks or cells	83
B66	Remove or install closure panels	75
A40	Serve as safety observer for tank entry personnel	75
A6	Clean or lubricate handtools or special tools	75
A7	Clean test equipment	75
C104	Perform air hose and external bubble tests	75
B68	Review aircraft maintenance forms for deficiencies	75
B61	Position fire extinguishers	75
C73	Interpret aircraft fuel system schematics	75
G291	Clean damaged sealant areas	75
A10	Contain fuel spills	75
C80	Isolate malfunctions of crossfeed or engine-feed systems	75
D156	Inspect integral tanks	75
B64	Purge fuel tanks or cells using exhaust purge method	67
B52	Disconnect batteries	67
B69	Rope off fuel system repair areas	67
B63	Purge fuel tanks or cells using blow purge method	67
B56	Inspect aircraft for presence of chocks or moorings	67
B59	Notify fire departments of fuel systems maintenance	67
G289	Apply fillet seals, such as first coat, by hand	67
G292	Clean integral fuel tanks	67

TABLE 19

REPRESENTATIVE TASKS PERFORMED BY AIR FORCE RESERVE COMMAND
DAFSC 2A654 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A654 (N=158)
B55	Ground equipment	95
A8	Clean work areas	93
B50	Depuddle fuel tanks or cells	92
B44	Bond equipment	91
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	89
B69	Rope off fuel system repair areas	87
E197	Remove or install boost pumps	87
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	86
B63	Purge fuel tanks or cells using blow purge method	85
B54	Drain fuel tanks or cells	85
G285	Apply adhesion promoters prior to applying sealants	85
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	84
G291	Clean damaged sealant areas	83
G304	Mix sealants by hand	83
A6	Clean or lubricate handtools or special tools	82
B62	Pull circuit breakers	82
G305	Mix sealants using machines	82
A40	Serve as safety observer for tank entry personnel	82
B53	Don or doff respirators	82
C120	Perform red talcum powder tests	82
C91	Localize fuel leak exits	82
G289	Apply fillet seals, such as first coat, by hand	80
D133	Inspect applied sealants	80
C94	Operationally check crossfeed or engine-feed systems	79
E182	Connect or disconnect B-nut-type fittings	79
B68	Review aircraft maintenance forms for deficiencies	78
G292	Clean integral fuel tanks	78
B66	Remove or install closure panels	77
E229	Remove or install integral tank or fuel cell access doors	77

TABLE 20

TASKS WHICH BEST DIFFERENTIATE BETWEEN AIR FORCE RESERVE COMMAND DAFSC 2A634 AND 2A654 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	2A634 (N=12)	2A654 (N=158)	DIFFERENCE
D139 Inspect external jettisonable fuel tank components	42	14	28
F275 Test boost pumps	58	31	27
A18 Maintain external fuel tank storage areas (tank farms)	50	23	27
C81 Isolate malfunctions of external jettisonable fuel tanks	50	23	27
C121 Perform soap suds tests on fuel cells	67	41	26
A4 Clean external fuel tanks	58	34	25
I333 Inspect egress system safety pins	33	9	24
D179 Perform pressure checks on external jettisonable fuel tanks	42	19	23
D136 Inspect EPU components from nitrogen control valves to poppet valves	33	11	22
E228 Remove or install hydrazine fuel tanks	33	11	22
M547 Schedule training	*	22	-22
B48 Check nitrogen levels on dewar quantity gauges	*	22	-22
K436 Perform CAMS inquiries for uncompleted maintenance event listings	*	22	-22
K412 Analyze CAMS data	*	22	-22
E205 Remove or install external-fixed fuel tank components	8	30	-22
A38 Remove or replace parts of special tools	8	29	-21
K435 Perform CAMS inquiries for training status	*	21	-21
M548 Schedule personnel for training	*	21	-21
F284 Test sliding gate shutoff valves	*	21	-21
I387 Walk wings or tails during aircraft towing operations	33	54	-21

* Less than 1 percent

TABLE 21

REPRESENTATIVE TASKS PERFORMED BY AIR FORCE RESERVE COMMAND
DAFSC 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK		2A674 (N=116)
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	92
B55	Ground equipment	92
A8	Clean work areas	88
B44	Bond equipment	88
B50	Depuddle fuel tanks or cells	88
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	87
E197	Remove or install boost pumps	87
B54	Drain fuel tanks or cells	84
C91	Localize fuel leak exits	84
B69	Rope off fuel system repair areas	84
G291	Clean damaged sealant areas	84
B63	Purge fuel tanks or cells using blow purge method	82
D133	Inspect applied sealants	82
E182	Connect or disconnect B-nut-type fittings	81
B62	Pull circuit breakers	81
A40	Serve as safety observer for tank entry personnel	80
B64	Purge fuel tanks or cells using exhaust purge method	80
B68	Review aircraft maintenance forms for deficiencies	80
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	79
E229	Remove or install integral tank or fuel cell access doors	79
G304	Mix sealants by hand	79
B59	Notify fire departments of fuel systems maintenance	78
C120	Perform red talcum powder tests	78
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	78
C94	Operationally check crossfeed or engine-feed systems	78
B53	Don or doff respirators	78
G305	Mix sealants using machines	78
C73	Interpret aircraft fuel system schematics	77

TABLE 22

TASKS WHICH BEST DIFFERENTIATE BETWEEN AIR FORCE RESERVE COMMAND DAFSC 2A654 AND 2A674 MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	2A654 (N=158)	2A674 (N=116)	DIFFERENCE
L515 Supervise military personnel	27	69	-42
L498 Inspect personnel for compliance with military standards	18	51	-33
L451 Conduct supervisory performance feedback sessions	9	42	-33
L455 Counsel subordinates concerning personal matters	20	53	-32
L445 Assign personnel to work areas or duty positions	25	58	-32
L486 Evaluate personnel for compliance with performance standards	19	49	-30
M540 Evaluate progress of trainees	26	55	-29
M529 Counsel trainees on training progress	29	57	-28
L520 Write recommendations for awards or decorations	10	37	-27
L499 Interpret policies, directives, or procedures for subordinates	13	41	-27

* Less than 1 percent

Comparisons of Active Duty, ANG, and AFRC Members

Tables 23 through 25 display the average relative percent time spent on job duties for each skill level-component group combination. The duties performed and time allocated to each duty by active duty, ANG, and AFRC personnel of each skill level are generally similar. Most group's members spend between 60 and 80 percent of their time engaged in 5 core duties: removing and installing aircraft fuel systems components, preparing aircraft for fuel systems maintenance, troubleshooting aircraft fuel systems, inspecting aircraft fuel systems, and performing support activities. However, there are two notable differences among these groups. First, the time active duty members spend performing management and supervisory activities greatly increases as they transition from the 5- to the 7-skill level, while the increase is less robust among ANG and AFRC personnel. Second, AFRC personnel, regardless of skill level, spend a greater percentage of their time repairing integral fuel tanks, compared to their active duty and ANG counterparts.

Summary

Aircraft Fuel Systems career ladder progression displays a typical pattern of technical duty focus at the lower skill levels, with a broadening of management, supervisory, and training functions as members advance to the 7-skill level. However, due to the limited number of personnel in the ANG and AFRC components, this trend is less obvious among guardsmen and reservists, who tend to perform more technical duties regardless of skill level.

TRAINING ANALYSIS

Occupational survey data are one of many sources of information which can be used to develop and revise career ladder training programs. This training analysis consists of active duty first-enlistment personnel, TE and TD, STS, and Plan of Instruction (POI) segments. The first segment includes a discussion of the jobs and tasks performed by first-enlistment personnel within the Aircraft Fuel Systems career ladder and presents a table depicting the equipment and resources they typically use. The TE and TD segment summarizes senior NCOs' entry-level training priorities and what they believe to be the most difficult tasks performed by AFSC 2A6X4 personnel. Finally, the STS and POI segments evaluate the career ladder's current STS and POI and recommend revisions based on survey data.

First-Enlistment Personnel

Knowledge of a career ladder's first-enlistment personnel is a critical prerequisite for conducting an entry-level training curriculum revision. In this study, there are 448 active duty members in their first-enlistment (i.e., 1-48 months TAFMS), accounting for 24 percent of the

TABLE 23

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS 3-SKILL LEVEL COMPONENT GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	ACTIVE 2A634 (N=384)	AFRC 2A634 (N=12)
A. PERFORMING SUPPORT ACTIVITIES	13	21
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	19	20
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	16	17
D. INSPECTING AIRCRAFT FUEL SYSTEMS	9	9
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	17	12
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3	2
G. REPAIRING INTEGRAL FUEL TANKS	9	10
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	2	5
J. PERFORMING MOBILITY ACTIVITIES	1	1
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	4	2
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	*	0
M. PERFORMING TRAINING ACTIVITIES	*	*
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1	*
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	1

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 24

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS 5-SKILL LEVEL COMPONENT GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	ACTIVE 2A654 (N=580)	ANG 2A654 (N=252)	AFRC 2A654 (N=158)
A. PERFORMING SUPPORT ACTIVITIES	10	14	11
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	13	17	15
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	15	15	16
D. INSPECTING AIRCRAFT FUEL SYSTEMS	12	12	12
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	14	16	15
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3	4	4
G. REPAIRING INTEGRAL FUEL TANKS	8	9	10
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*	*	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	2	4	3
J. PERFORMING MOBILITY ACTIVITIES	2	2	2
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	7	3	3
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	7	1	3
M. PERFORMING TRAINING ACTIVITIES	3	1	2
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1	1	1
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	2	3

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 25

TIME SPENT ON AFSC 2A6X4 JOB DUTIES ACROSS 7-SKILL LEVEL COMPONENT GROUPS
(AVERAGE RELATIVE PERCENT TIME SPENT)

DUTY	ACTIVE 2A674 (N=238)		ANG 2A674 (N=132)		AFRC 2A674 (N=116)	
A. PERFORMING SUPPORT ACTIVITIES	6		10		9	
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	6		11		14	
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	8		13		13	
D. INSPECTING AIRCRAFT FUEL SYSTEMS	10		12		11	
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	6		12		13	
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	1		4		3	
G. REPAIRING INTEGRAL FUEL TANKS	3		7		8	
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*		*		*	
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	1		4		3	
J. PERFORMING MOBILITY ACTIVITIES	3		3		2	
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	8		7		4	
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	35		8		12	
M. PERFORMING TRAINING ACTIVITIES	5		4		5	
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	4		2		1	
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	4		4		3	

* Less than 1 percent

NOTE: Due to rounding, columns may not add to 100 percent

survey sample. As depicted in Figure 2, the majority of these members (72 percent) are in the Fuel Systems Maintenance Cluster, with an additional 15 percent identified in the Aircraft Preparation Cluster. Table 26 shows these airmen spend their time preparing aircraft for fuel systems maintenance (18 percent), removing and installing aircraft fuels systems components (17 percent), troubleshooting aircraft fuel systems (16 percent), performing support activities (13 percent), and inspecting aircraft fuel systems (10 percent). According to Table 27, nearly all of the representative tasks performed by first-enlistment personnel are technical tasks associated with these five core career ladder duty areas.

Active duty first-enlistment personnel use a variety of resources on the job. Tables 28 through 32 collectively list the nonexplosion-proof aerospace ground equipment (AGE), explosion-proof AGE, test equipment, tools, chemicals, compounds, or materials used by more than 30 percent of active duty first-enlistment personnel.

Training Emphasis (TE) and Task Difficulty (TD) Data

TE and TD data can assist trainers in deciding which tasks to emphasize in entry-level training. As previously described in the **SURVEY METHODOLOGY** section, TE ratings rely on the judgments of senior career ladder NCOs (i.e., primarily E-6s and E-7s) from operational units to develop a rank ordering of those tasks considered important for entry-level training. Similarly, senior NCOs' TD ratings develop a rank ordering of those tasks considered to be difficult to learn to perform. When combined with data showing the percentages of first-enlistment personnel performing these tasks, training personnel can determine if adjustments to the curriculum are necessary. For example, tasks receiving both high TE and TD ratings and moderate to high percentages of members performing may warrant resident training. Those tasks receiving both high TE and TD ratings accompanied by low percentages may be more appropriate for OJT at gaining units. While tasks with low TE and TD ratings may be omitted from entry-level training, this decision must be weighted against the percentages of members performing those tasks and the career ladder functional manager's concerns for safety or impact to mission effectiveness.

Table 33 provides a list of those tasks with the highest TE ratings. The percentages of first-job and first-enlistment members performing and TD ratings are also included for each task. Nearly all of these tasks are technical tasks associated with four of the career ladder's five core duties (i.e., preparing aircraft for fuel systems maintenance, troubleshooting aircraft fuel systems, removing or installing aircraft fuel systems components, and performing support activities). The remaining items are related to sealing and CAMS activities. Many of these tasks are performed by high percentages of first-enlistment personnel. Table 34 lists those tasks with the highest TD ratings. The percentages of members performing these tasks for various TAFMS and DAFSC groups and TE ratings are also provided. The list reveals the tasks rated as most difficult are those relating to three of the career ladder's five core duties (i.e., troubleshooting aircraft fuel systems, removing or installing aircraft fuel systems components, and performing support activities). The remaining items are related to repairing aircraft fuel system components and performing general aircraft or cross utilization training activities.

FIRST-ENLISTMENT AFSC 2A6X4 AIRCRAFT FUEL SYSTEMS JOBS (N=448)

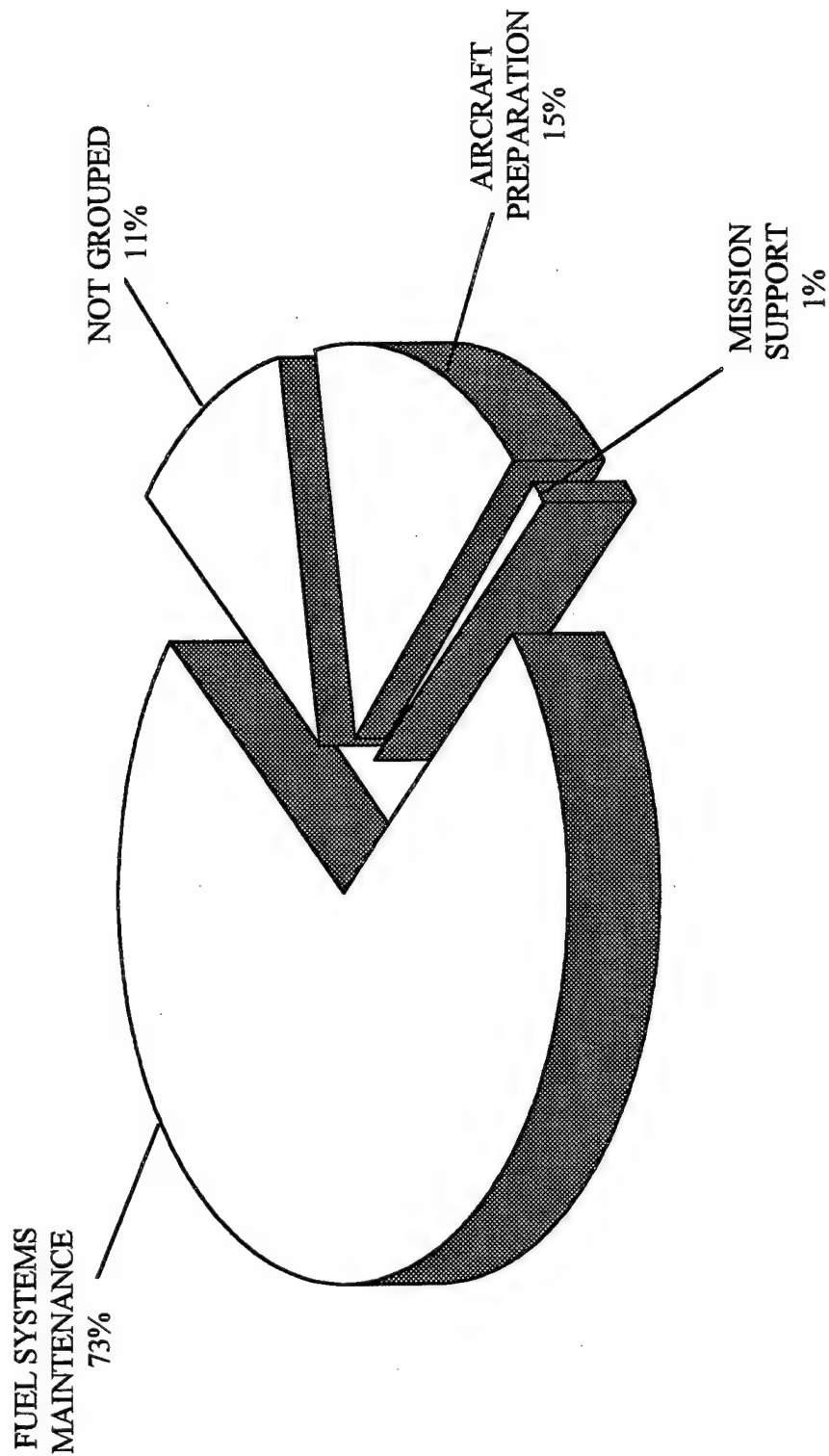


FIGURE 2

TABLE 26

TIME SPENT ON AFSC 2A6X4 JOB DUTIES BY ACTIVE DUTY FIRST-ENLISTMENT AIRMEN
(PERCENT MEMBERS PERFORMING)

DUTY	FIRST- ENLISTMENT (N=448)
A. PERFORMING SUPPORT ACTIVITIES	13
B. PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	18
C. TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	16
D. INSPECTING AIRCRAFT FUEL SYSTEMS	10
E. REMOVING AND INSTALLING AIRCRAFT FUEL SYSTEMS COMPONENTS	17
F. REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3
G. REPAIRING INTEGRAL FUEL TANKS	9
H. PERFORMING GENERAL WATER INJECTION SYSTEMS ACTIVITIES	*
I. PERFORMING GENERAL AIRCRAFT OR CROSS UTILIZATION TRAINING (CUT) ACTIVITIES	2
J. PERFORMING MOBILITY ACTIVITIES	1
K. PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) ACTIVITIES	5
L. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1
M. PERFORMING TRAINING ACTIVITIES	*
N. PERFORMING GENERAL ADMINISTRATIVE AND TECHNICAL ORDER SYSTEM ACTIVITIES	1
O. PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3

* Less than 1 percent

TABLE 27

REPRESENTATIVE TASKS PERFORMED BY
ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS PERFORMING)

TASK	FIRST- ENLISTMENT (N=448)
B44	Bond equipment 93
A8	Clean work areas 92
B55	Ground equipment 89
B63	Purge fuel tanks or cells using blow purge method 86
B50	Depuddle fuel tanks or cells 85
B59	Notify fire departments of fuel systems maintenance 85
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings 84
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry 84
B69	Rope off fuel system repair areas 84
E197	Remove or install boost pumps 82
G304	Mix sealants by hand 81
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions 80
E182	Connect or disconnect B-nut-type fittings 80
G285	Apply adhesion promoters prior to applying sealants 80
A10	Contain fuel spills 79
B54	Drain fuel tanks or cells 78
B62	Pull circuit breakers 77
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained 77
E229	Remove or install integral tank or fuel cell access doors 76
B60	Position drip pans 76
B68	Review aircraft maintenance forms for deficiencies 76
G305	Mix sealants using machines 75
B61	Position fire extinguishers 74
C91	Localize fuel leak exits 74
E232	Remove or install internally mounted fuel quantity probes 74
C94	Operationally check crossfeed or engine-feed systems 71
C120	Perform red talcum powder tests 70

TABLE 28

NONEXPLOSION-PROOF AEROSPACE GROUND EQUIPMENT USED BY MORE THAN 30
PERCENT OF ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS USING)

NONEXPLOSION-PROOF AEROSPACE GROUND EQUIPMENT	FIRST- ENLISTMENT (N=448)
Maintenance Stands	84
Air Compressors	71
Light Carts	65
Nonexplosion-Proof Heaters	55
Air Conditioners	37
AM/M32A-60 Gas Turbine Compressors	35
Nitrogen Carts	33

TABLE 29

EXPLOSION-PROOF AEROSPACE GROUND EQUIPMENT USED BY MORE THAN 30 PERCENT
OF ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS USING)

EXPLOSION-PROOF AEROSPACE GROUND EQUIPMENT	FIRST- ENLISTMENT (N=448)
Bowsers	88
Maintenance Stands, such as B-4A Stands	77
HDU-13M Heater Blowers	76
Vacuum Cleaners	72
Ambient Air Breathing Pumps	65
MA-1 Blowers	58
Rhine Air Low-Pressure Breathing Kits	58
Pneumatic-Powered Fans, such as Rhine	54
Universal External Fuel Tank Certifiers	37
Air Purifying Carts	30

TABLE 30

TEST EQUIPMENT USED BY MORE THAN 30 PERCENT OF
ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS USING)

TEST EQUIPMENT	FIRST- ENLISTMENT (N=448)
Multimeters	79
Pressure Gauges	70
Water Manometers	69
In-Flight Refueling (IFR) Receptacle Testers	68
Combustible and Toxic Gas Indicators	64
Pressurization and Vent System Test Kits	63
Leak Tracing Devices	54
Combustible Gas Alarms	44
Tank Pressure Testers, Cap Assembly	43
Combustible Gas Indicators	42
Bonding Meters	40
Oxygen Analyzers	37
Fuel Boost Pump Pressure Testers	36
Modified Filler Caps	33
Pressure Boxes	32

TABLE 31

TOOLS OR EQUIPMENT USED BY MORE THAN 30 PERCENT OF
ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS USING)

TOOL OR EQUIPMENT	FIRST- ENLISTMENT (N=448)
Torque Wrenches	92
Canvas Tool Bags	85
Sealant Scrapers	84
Sealant Guns	82
Sealant Spatulas	73
Spanner Wrenches	70
Adapter Kits, Torque Wrench, such as Star Fittings	68
Fuel Manifold Plugs	68
Impact Wrenches	63
Injector Kits	63
Gun and Mixer Kits	61
Strap Wrenches	61
Air Movers	56
Screw Removal Tools	50
Single-Point Refueling Receptacle Adapter Go, No-Go Gauges	44
Boost Pump Installation Tools	43
Boost Pump Removal Tools	41
Micrometers	39
Filleting Nozzles	37
Alignment Tools	35
Wiggins Sleeve Removers	34
Plexiglass Fuel Panels	33

TABLE 32

CHEMICALS, COMPOUNDS, OR MATERIALS USED BY MORE THAN 30 PERCENT OF
ACTIVE DUTY AFSC 2A6X4 FIRST-ENLISTMENT MEMBERS
(PERCENT MEMBERS USING)

CHEMICAL, COMPOUND, OR MATERIAL	FIRST- ENLISTMENT (N=448)
Petrolatum	85
JP-8, Turbine Fuel Aviation	84
Methyl Ethyl Ketone	80
Leak Test Powder	77
Oyltite Stik	75
Sealant Compound	74
Cleaning Compound Solvent	67
Epoxy Adhesive	65
Pig Putty	58
Leak Test Compound	57
Ammonia Hydroxide	48
Phenolphthalein	44
Epoxy Tab-O	43
Isopropyl Alcohol	41
Hardman Epoxy	40
Antifreeze	31

TABLE 33

AFSC 2A6X4 TASKS WITH THE HIGHEST TRAINING EMPHASIS RATINGS

TASK		TE*	1ST JOB (N=244)	1ST ENL (N=448)	TD**
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	7.68	77	80	4.21
B63	Purge fuel tanks or cells using blow purge method	6.79	86	86	3.46
B53	Don or doff respirators	6.74	57	66	3.13
B44	Bond equipment	6.72	95	93	2.23
B55	Ground equipment	6.64	86	89	2.09
A40	Serve as safety observer for tank entry personnel	6.55	62	65	3.41
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	6.40	68	77	3.98
B50	Depuddle fuel tanks or cells	6.32	81	85	3.89
C73	Interpret aircraft fuel system schematics	6.30	52	63	6.88
B68	Review aircraft maintenance forms for deficiencies	6.30	68	76	4.68
G289	Apply fillet seals, such as first coat, by hand	6.11	58	62	5.26
B64	Purge fuel tanks or cells using exhaust purge method	6.04	67	69	3.76
G287	Apply faying surface seals	5.96	46	53	5.01
B45	Check aircraft for explosives	5.92	57	60	3.17
G288	Apply fillet seals with guns	5.87	47	49	5.22
B69	Rope off fuel system repair areas	5.79	80	84	2.23
C91	Localize fuel leak exits	5.75	68	74	5.75
G285	Apply adhesion promoters prior to applying sealants	5.70	75	80	3.74
G291	Clean damaged sealant areas	5.68	66	69	4.95
G296	Inject curing or noncuring sealants with high-pressure injection guns	5.58	53	56	5.33
E188	Food cells for installation	5.55	51	60	5.65
K433	Open or close CAMS	5.55	44	49	3.78
E190	Install safetying devices	5.51	46	52	4.47
E189	Inspect safetying devices	5.51	45	54	4.48
E214	Remove or install fuel cells	5.47	58	65	6.86
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	5.47	82	84	1.40
K411	Access core automated maintenance system (CAMS) menus and data screens	5.36	48	54	4.25
G292	Clean integral fuel tanks	5.34	51	56	4.52

* The mean TE rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean TD rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

TABLE 34

EXAMPLES OF AFSC 2A6X4 TASKS WITH THE HIGHEST TASK DIFFICULTY RATINGS

TASK	TD*	1ST-JOB (N=244)	1ST-ENL (N=448)	ACTIVE 2A634 (N=384)	ACTIVE 2A654 (N=580)	ACTIVE 2A674 (N=238)	TE**
A13 Direct hydrazine spill cleanup procedures	7.49	14	19	18	30	25	2.72
F261 Refuel or defuel hydrazine fuel tanks	7.30	11	15	14	20	9	2.75
F272 Repair drain pump inductive motors	7.23	4	3	3	3	0	0.36
F271 Repair drain pump armature motors	7.22	4	4	3	4	1	0.36
I349 Perform integrated combat turn duties	7.19	1	2	2	1	0	0.30
C74 Isolate electrical malfunctions using multimeters	7.16	30	42	39	56	34	3.98
A11 Contain hydrazine spills	7.15	25	31	29	36	24	3.92
F268 Repair boost pumps	7.14	10	9	9	6	2	0.60
I348 Perform ground engine runs	7.12	6	6	6	4	1	0.36
C90 Isolate malfunctions of vent systems	7.03	49	64	61	78	48	5.02
C84 Isolate malfunctions of fuel transfer indicating systems	7.01	46	58	57	65	42	4.17
C76 Isolate malfunctions of air refueling systems of receiver aircraft	7.00	36	46	44	58	37	3.77
F273 Repair sliding gate shutoff valves	6.93	8	9	8	8	2	0.66
F269 Repair butterfly-type shutoff valves	6.92	8	9	9	7	2	0.75
C73 Interpret aircraft fuel systems schematics	6.88	52	63	60	79	59	6.30
E214 Remove or install fuel cells	6.86	58	65	63	68	37	5.47
C87 Isolate malfunctions of pressurization systems	6.86	43	54	52	60	36	4.75
A23 Maintain hydrazine storage facilities	6.83	17	20	20	22	12	2.08
C77 Isolate malfunctions or air refueling systems of tankers	6.79	20	23	22	20	17	2.68
E218 Remove or install fuel hydraulic radiators or fuel oil heat exchangers	6.75	30	36	35	40	20	2.87

* The mean TD rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

** The mean TE rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

Specialty Training Standard (STS)

To assist in an evaluation of the AFSC 2A6X4 STS (dated August 1996), technical training personnel from the 361st Training Squadron, Sheppard AFB TX, matched (i.e., linked) tasks from the JI to the appropriate STS item(s). A "matched task" version of the STS was then printed with the percentages of members performing these tasks displayed for various TAFMS and DAFSC groups. Criteria contained within AETC Instruction (AETCI) 36-2601, paragraph 2.2, and Attachment 2, were used to review the relevance of each STS item with respect to occupational data. All STS items with matched tasks were reviewed; a complete review of the STS was not possible due to the presence of items without matched tasks. Overall, the STS was found to be well supported by occupational data.

AETCI 36-2601 states that any STS item with matched tasks performed by 20 percent or more of first-job (i.e., 1-24 months TAFMS), first-enlistment (i.e., 1-48 months TAFMS), or 3-, 5-, or 7-skill level members is considered to be supported by occupational data and should be retained in the STS. An analysis of the AFSC 2A6X4 STS found all but two matched items were supported (see Table 35). Generally, these two STS items are matched to tasks with low percent members performing and moderate to low TE and TD ratings. As a result, they have been identified as candidates for deletion from the STS. Training personnel should carefully review these areas of the STS to determine which, if any, are suitable for deletion.

The STS analysis also identified multiple items throughout the STS possessing proficiency codes not supported by occupational data (see Table 36 for examples). Consider STS item A2.20.3 "Troubleshooting," which concerns troubleshooting the fuel transfer indicating system and requires entry-level personnel be trained in this area via OJT. However, since over 50 percent of first-enlistment and 3-skill level personnel are "isolating malfunctions of fuel transfer indicating systems" in the field, the STS item warrants a more substantial proficiency code. Training personnel should carefully review the STS to determine which proficiency codes require revision based on occupational data. This review should also consider the TE and TD ratings provided in the table. A more detailed explanation of these ratings is provided in the **SURVEY METHODOLOGY** section. Finally, many STS items possess proficiency codes of "3b" (i.e., trainee can determine the step-by-step procedures for doing the task, can do all parts of the task, and requires only a spot check of completed work) or "3c" (i.e., trainee can identify why and when the task must be done and why each step is needed, can do all parts of the task, and requires only a spot check of completed work). Historically, such high-level codes are not commonly applied to 3-skill level technical training.

Table 37 displays examples of unmatched tasks with greater than 20 percent members performing these tasks for various TAFMS and DAFSC groups. These tasks are technical in nature and are associated with a number of technical duties. Due to the moderate to high percentage of members performing these tasks, and occasional high TE or TD ratings, training

TABLE 35

AFSC 2A6X4 SPECIALTY TRAINING STANDARD ITEMS NOT SUPPORTED BY
OCCUPATIONAL SURVEY REPORT DATA

STS ITEM WITH ASSOCIATED MATCHED TASK(S)	TE*	1ST-JOB (N=244)	1ST-ENL (N=448)	ACTIVE 2A634 (N=384)	ACTIVE 2A654 (N=580)	ACTIVE 2A674 (N=238)	TD**
A2.22.7. Denest external fuel tank canisters (-)							
A39 Repair or service WRM external jettisonable fuel tank nested containers	0.51	13	14	14	12	7	5.03
A2.25.5. Repair fuel cells (2b)							
F258 Patch bladder fuel cells	3.74	14	15	14	16	13	6.71
F257 Mix chemical solvents or coatings for fuel cell repairs	3.66	18	17	17	18	11	5.06
F250 Buff cells	2.58	9	10	10	9	5	5.19
F256 Coat fuel cell repairs with lacquer	2.58	8	8	8	6	3	4.65

* The mean TE rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean TD rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

TABLE 36

EXAMPLES OF AFSC 2A6X4 SPECIALTY TRAINING STANDARD ITEMS
FOR DAFSC 2A634 PROFICIENCY CODE REVIEW

STS ITEM WITH ASSOCIATED TASK(S)	TE*	1ST JOB (N=244)	1ST ENL (N=448)	ACTIVE	
				2A634 (N=384)	TD**
A2.10.3. Aircraft tubing and fittings (B)					
E186 Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	4.74	82	84	83	4.12
E182 Connect or disconnect B-nut-type fittings	4.68	73	80	80	3.59
A2.11.3. Isolate electrical malfunctions (-)					
C74 Isolate electrical malfunctions using multimeters	3.98	30	42	39	7.16
A2.16.5. Inspect components (2b)					
D152 Inspect installed receiver aircraft air refueling system components	2.64	29	36	34	5.47
D167 Inspect removed receiver aircraft air refueling system components	2.43	25	32	30	4.96
A2.17.5. Inspect components (2b)					
D150 Inspect installed manifold scavenge system components	2.55	27	33	32	5.11
D165 Inspect removed manifold scavenge system components	2.36	26	29	28	4.97
A2.18.5. Inspect components (2b)					
D153 Inspect installed tank scavenge system components	2.42	25	31	29	5.26
D168 Inspect removed tank scavenge system components	2.04	24	29	29	4.82
A2.20.3. Troubleshooting (-)					
C84 Isolate malfunctions of fuel transfer indicating systems	4.17	46	58	57	7.01

* The mean TE rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean TD rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

TABLE 37

EXAMPLES OF TECHNICAL TASKS NOT REFERENCED IN THE AFSC 2A6X4 SPECIALTY TRAINING STANDARD

TASK	TE*	1ST-JOB (N=244)	1ST-ENL (N=448)	ACTIVE 2A634 (N=384)	ACTIVE 2A654 (N=580)	ACTIVE 2A674 (N=238)	TD**
K434 Perform CAMS inquiries for aircraft maintenance discrepancies, such as scheduled, deferred, or unscheduled	5.25	33	41	39	60	55	4.40
C110 Perform manifold leak tests	3.92	43	51	48	55	34	4.75
D145 Inspect installed crossfeed system components	3.51	43	54	52	72	57	5.15
C109 Perform manifold fitting leak checks	3.49	45	52	51	52	31	4.99
O587 Inventory equipment, tools, parts, or supplies	3.34	41	41	41	50	46	4.81
O582 Evaluate serviceability of equipment, tools, parts, or supplies	3.11	33	33	34	46	49	4.77
F253 Clean fuel pump mounting surfaces or screens	3.09	32	37	34	42	20	3.86
D178 Perform in-process inspections (IPIs)	3.06	9	12	11	48	60	6.27
I387 Walk wings or tails during aircraft towing operations	2.62	42	45	42	55	33	3.08
J390 Assemble mobility boxes	2.57	25	31	30	43	32	4.28
J399 Pack individual mobility equipment for deployments	2.51	21	26	25	42	30	4.18
A26 Operationally check installed hangar real property equipment	2.45	28	31	30	41	40	3.86
O583 Identify and report equipment supply problems	1.89	20	20	19	32	42	5.28
A25 Operate maintenance dispatch vehicles	1.83	59	67	67	77	50	3.06
O580 Coordinate supply-related matters with appropriate agencies	1.66	10	11	11	27	43	5.43
O579 Coordinate maintenance or equipment with appropriate agencies	1.53	9	10	10	24	41	5.19

* The mean TE rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean TD rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

personnel should review these tasks for possible inclusion in the STS. These tasks may either fit existing items, but were simply not referenced during the match, or they may require the introduction of a new STS item.

Plan of Instruction (POI)

In preparation for the POI analysis, technical training personnel matched JI tasks to the Apprentice Aircraft Fuel Systems Course (J3ABR2A634-001) POI (dated March 1995). POI items with matched tasks performed by 30 percent or more of first-job (i.e., 1-24 months TAFMS) or first-enlistment (i.e., 1-48 months TAFMS) personnel are considered to be supported by occupational data and should be retained in the POI. The POI analysis found 12 items to be unsupported (see Table 38). These POI items are matched to tasks performed by low percentages of members and generally possess average TE and TD ratings. As a result, they have been identified as candidates for deletion from the POI. Training personnel should carefully review these areas of the POI to determine which are suitable for deletion.

Table 39 displays examples of unmatched tasks performed by greater than 30 percent of first-job and first-enlistment personnel. In general, these tasks are technical in nature and are associated with a number of technical duties. Due to the moderate to high percentages of members performing these tasks, and their occasionally high TE and TD ratings, training personnel should review these tasks for possible inclusion in the POI. As noted in the STS analysis, these tasks may either fit existing items, but were simply not referenced during the match, or they may require the introduction of a new POI item.

JOB SATISFACTION ANALYSIS

An analysis of job satisfaction indicators can provide career ladder functional managers with a better understanding of the factors affecting the overall performance of Aircraft Fuel Systems personnel. The survey included items dealing with job interest, perceived use of talents, perceived use of training, sense of accomplishment, and reenlistment intentions. On the whole, the analysis concluded that personnel are generally content with their jobs. This conclusion can be interpreted from three perspectives as depicted in Tables 40 through 42.

Table 40 compares the responses of active duty Aircraft Fuel Systems personnel to a comparative sample of active duty "mission equipment management" personnel. This group consists of the 2A3X2A/B/C, 2A5X3A/B/C, 2A6X3, 2A6X5, 2A6X6, 2A7X1, 2A7X3, 2E1X1, 2E8X1, 2M0X2, 2W0X1, and 2W2X1 career ladders using job satisfaction data obtained in 1997. For most indicators, the table reveals AFSC 2A6X4 personnel job satisfaction is comparable to that of personnel in comparative career ladders, regardless of TAFMS. The two exceptions are the indicators "expressed job interest," in which Aircraft Fuel Systems personnel are less satisfied than comparable career ladder personnel, and "perceived use of training," in which specialty

TABLE 38

AFSC 2A6X4 PLAN OF INSTRUCTION ITEMS NOT SUPPORTED BY OCCUPATIONAL DATA

POI ITEM WITH ASSOCIATED MATCHED TASK	TE*	1ST-JOB (N=244)	1ST-ENL (N=448)	TD**
I.2.a.(6). Precautions for handling fuels and chemicals F257 Mix chemical solvents or coatings for fuel cell repairs	3.66	18	17	5.06
I.5.d.(2). Advantages of CAMS K438 Perform CAMS interface with base supply systems	3.87	20	23	5.19
I.7.c.(2). Pre-use inspection requirements A28 Perform operator maintenance on aerospace ground equipment (AGE)	2.75	27	29	4.14
I352 Perform pre-use inspections of aircraft support equipment, such as hydraulic servicing carts or maintenance stands	1.66	15	15	5.26
II.3.a.(3). External fuel transfer C123 Perform transfer checks on external-fixed fuel tanks	2.49	23	25	5.06
III.2.a.(2). Component inspection D178 Perform in-process inspections (IPIs)	3.06	9	12	6.27
V.1.a. Identify principles relating to integral fuel tank constructional features and access door sealing methods				
V.1.a.(1). Primary structural members				
V.1.a.(2). Secondary structural members				
V.1.a.(3). Fasteners				
V.1.a.(4). Terms				
V.1.a.(5). Access door sealing methods				
V.2. Fuel Leak Troubleshooting C71 Construct leak flowcharts	3.17	13	20	6.10

* The mean Training Emphasis (TE) rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean Task Difficulty (TD) rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

TABLE 39

EXAMPLES OF TECHNICAL TASKS NOT REFERENCED IN THE AFSC 2A6X4
PLAN OF INSTRUCTION

TASK	TE*	1ST- JOB (N=244)	1ST- ENL (N=448)	TD**
G295 Flair out sealant edges	5.04	29	37	4.34
G299 Make temporary repair using curing-type sealants	4.57	46	50	4.34
B67 Remove or install internal braces, such as formers	4.30	48	52	4.59
B62 Pull circuit breakers	4.17	70	77	2.30
C74 Isolate electrical malfunctions using multimeters	3.98	30	42	7.16
C110 Perform manifold leak tests	3.92	43	51	4.75
C109 Perform manifold fitting leak checks	3.49	45	52	4.99
I587 Inventory equipment, tools, parts, or supplies	3.34	41	41	4.81
A12 Direct fuel spill cleanup procedures	3.23	25	32	5.60
E204 Remove or install external tank nosecones or tailcones	3.21	32	38	5.61
O582 Evaluate serviceability of equipment, tools, parts, or supplies	3.11	33	33	4.77
F253 Clean fuel pump mounting surfaces or screens	3.09	32	37	3.86
A1 Apply chlorine or bleach to neutralize hydrazine spills	2.98	30	33	4.79
C117 Perform pressure tests on installed fuel cells	2.98	34	39	5.83
D174 Inspect vent systems	2.96	30	42	5.32
E218 Remove or install fuel hydraulic radiators or fuel oil heat exchangers	2.87	30	36	6.75
E222 Remove or install fuel or air quick-disconnects	2.85	32	38	4.93
E203 Remove or install external jettisonable fuel tank components	2.83	31	35	5.22
E207 Remove or install externally mounted aircraft fuel quantity probes	2.81	39	43	4.24
F262 Remove or install air refueling receptacle parts	2.70	40	45	5.83
C98 Operationally check heat sink or heat exchanger systems	2.64	27	33	5.61
I387 Walk wings or tails during aircraft towing operations	2.62	42	45	3.08
J390 Assemble mobility boxes	2.57	25	31	4.28
A36 Purge emergency power unit (EPU) systems	2.55	32	34	5.75

* The mean Training Emphasis (TE) rating is 2.17 with a standard deviation of 1.64; tasks with TE ratings in excess of 3.81 are considered to be "high" in task emphasis

** The mean Task Difficulty (TD) rating is 5.00 with a standard deviation of 1.00; tasks with TD ratings in excess of 6.00 are considered to be "high" in task difficulty

TABLE 40

JOB SATISFACTION INDICATORS FOR ACTIVE DUTY AFSC 2A6X4 MEMBERS AND A COMPARATIVE SAMPLE ACROSS TAFMS
(PERCENT MEMBERS RESPONDING)

JOB SATISFACTION INDICATOR	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	2A6X4 (N=448)	COMPARATIVE SAMPLE (N=3,883)	2A6X4 (N=205)	COMPARATIVE SAMPLE (N=2,651)	2A6X4 (N=549)	COMPARATIVE SAMPLE (N=6,033)
EXPRESSED JOB INTEREST:						
INTERESTING	57	65	60	65	64	74
SO-SO	27	19	28	20	25	17
DULL	16	16	12	15	11	9
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO PERFECT	71	72	82	75	85	83
NONE TO VERY LITTLE	29	28	18	25	15	17
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO PERFECT	92	85	95	82	89	80
NONE TO VERY LITTLE	8	15	5	18	11	20
SENSE OF ACCOMPLISHMENT:						
SATISFIED	67	64	65	66	66	72
NEUTRAL	19	17	15	15	15	11
DISSATISFIED	14	19	20	19	19	17
REENLISTMENT INTENTIONS:						
YES OR PROBABLY YES	49	51	57	66	69	71
NO OR PROBABLY NO	51	48	43	34	9	8
WILL RETIRE	0	*	0	*	22	21

* Less than 1 percent

NOTE: Comparative data are from AFSCs 2A3X2A/B/C, 2A5X3A/B/C, 2A6X3, 2A6X5, 2A6X6, 2A7X1, 2A7X3, 2E1X1, 2E8X1, 2M0X2, 2W0X1, and 2W2X1 personnel surveyed in 1997. Due to rounding, columns may not add to 100 percent

TABLE 41

COMPARISON OF CURRENT AND PREVIOUS STUDY JOB SATISFACTION INDICATORS ACROSS TAFMS
(PERCENT MEMBERS RESPONDING)

JOB SATISFACTION INDICATOR	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	1998 2A6X4 (N=448)	1994 246X4 (N=236)	1998 2A6X4 (N=205)	1994 2A6X4 (N=294)	1998 2A6X4 (N=549)	1994 2A6X4 (N=615)
EXPRESSED JOB INTEREST: INTERESTING SO-SO DULL	57 27 16	71 15 14	60 28 12	72 22 6	64 25 11	71 20 8
PERCEIVED USE OF TALENTS: FAIRLY WELL TO PERFECT NONE TO VERY LITTLE	71 29	82 17	82 18	84 15	85 15	86 14
PERCEIVED USE OF TRAINING: FAIRLY WELL TO PERFECT NONE TO VERY LITTLE	92 8	96 5	95 5	93 6	89 11	90 10
SENSE OF ACCOMPLISHMENT: SATISFIED NEUTRAL DISSATISFIED	67 19 14	78 10 10	65 15 20	79 12 9	66 15 19	75 11 14
REENLISTMENT INTENTIONS: YES OR PROBABLY YES NO OR PROBABLY NO WILL RETIRE	49 51 0	71 29 0	57 43 0	81 18 0	69 9 22	79 7 14

NOTE: Due to rounding, columns may not add to 100 percent

TABLE 42

JOB SATISFACTION INDICATORS FOR AFSC 2A6X4 ACTIVE DUTY MEMBERS ACROSS JOBS
(PERCENT MEMBERS RESPONDING)

JOB SATISFACTION INDICATOR	FUEL SYSTEMS MAINTENANCE (ST116)	AIRCRAFT PREPARATION (ST113)	SUPERVISOR (ST047)	MISSION SUPPORT (ST107)	QUALITY ASSURANCE (ST135)	EXTERNAL TANK MAINTENANCE (ST135)
EXPRESSED JOB INTEREST:						
INTERESTING	59	59	70	60	86	40
SO-SO	28	29	22	20	0	40
DULL	13	12	8	20	14	20
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO PERFECT	80	71	92	90	72	80
NONE TO VERY LITTLE	20	29	8	10	29	20
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO PERFECT	93	82	90	70	86	100
NONE TO VERY LITTLE	7	8	10	30	14	0
SENSE OF ACCOMPLISHMENT:						
SATISFIED	66	65	72	50	57	80
NEUTRAL	16	16	8	20	14	0
DISSATISFIED	17	19	20	40	29	20
REENLISTMENT INTENTIONS:						
YES OR PROBABLY YES	60	52	61	60	57	40
NO OR PROBABLY NO	32	46	13	30	0	40
WILL RETIRE	7	2	26	10	43	20

NOTE: Due to rounding, columns may not add to 100 percent

personnel are more satisfied than comparable personnel. Table 41 compares the responses of active duty Aircraft Fuel Systems personnel in this study to specialty personnel surveyed in the 1994 study. Overall, job satisfaction is lower in 1998 than in 1994. Although satisfaction tends to increase with TAFMS, decreases in "expressed job interest," "sense of accomplishment," and "reenlistment intentions" are notable among all personnel, regardless of TAFMS. Finally, Table 42 permits comparisons of job satisfaction indicators across identified job groups. QA personnel expressed the highest job interest. Ironically, while External Tank Maintenance personnel expressed the lowest job interest and intentions to reenlist, they expressed the highest sense of accomplishment and perceived use of training.

IMPLICATIONS

This survey was conducted primarily to provide training personnel with current information on the Aircraft Fuel Systems career ladder for use in revising existing career ladder documents and training programs. The career ladder structure was found to be generally stable when compared to the previous study and displays a typical pattern of career progression with personnel transitioning from technical to management, supervisory, and training functions with increasing experience. The training analysis concluded the STS is well supported; the high "perceived use of training" job satisfaction indicator ratings further supports this conclusion. Additionally, the training analysis concluded the POI is generally supported, with numerous items identified for review by training personnel as candidates for proficiency code revision. Finally, Aircraft Fuel Systems job satisfaction was found to be good overall.

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APPENDIX A

**SELECTED REPRESENTATIVE TASKS PERFORMED BY
MEMBERS OF CAREER LADDER JOBS**

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TABLE A1
FUELS SYSTEMS MAINTENANCE CLUSTER
(ST116)

TASK		PERCENT MEMBERS PERFORMING (N=1,393)
B55	Ground equipment	95
B50	Depuddle fuel tanks or cells	94
B44	Bond equipment	93
A8	Clean work areas	93
E197	Remove or install boost pumps	93
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	92
C91	Localize fuel leak exits	92
G285	Apply adhesion promoters prior to applying sealants	92
B59	Notify fire departments of fuel systems maintenance	91
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	91
B69	Rope off fuel system repair areas	90
E182	Connect or disconnect B-nut-type fittings	90
C94	Operationally check crossfeed or engine-feed systems	90
B68	Review aircraft maintenance forms for deficiencies	90
B63	Purge fuel tanks or cells using blow purge method	90
C80	Isolate malfunctions of crossfeed or engine-feed systems	89
B47	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	89
B54	Drain fuel tanks or cells	89
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	89
G304	Mix sealants by hand	89
C103	Operationally check transfer systems	88
G305	Mix sealants using machines	87
B62	Pull circuit breakers	87
C90	Isolate malfunctions of vent systems	87
G291	Clean damaged sealant areas	86
E229	Remove or install integral tank or fuel cell access doors	86
C73	Interpret aircraft fuel system schematics	85

TABLE A2
AIRCRAFT PREPARATION CLUSTER
(ST113)

TASK		PERCENT MEMBERS PERFORMING (N=152)
B44	Bond equipment	95
A8	Clean work areas	92
B50	Depuddle fuel tanks or cells	90
B55	Ground equipment	88
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	81
B63	Purge fuel tanks or cells using blow purge method	81
B54	Drain fuel tanks or cells	80
B69	Rope off fuel system repair areas	77
B70	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	74
E186	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	72
E197	Remove or install boost pumps	68
B59	Notify fire departments of fuel systems maintenance	68
G285	Apply adhesion promoters prior to applying sealants	68
A10	Contain fuel spills	68
G304	Mix sealants by hand	64
E182	Connect or disconnect B-nut-type fittings	64
A40	Serve as safety observer for tank entry personnel	64
B64	Purge fuel tanks or cells using exhaust purge method	63
E229	Remove or install integral tank or fuel cell access doors	63
B60	Position drip pans	62
G291	Clean damaged sealant areas	61
C91	Localize fuel leak exits	61
G305	Mix sealants using machines	61
B62	Pull circuit breakers	61
A6	Clean or lubricate handtools or special tools	59
B52	Disconnect batteries	57
B53	Don or doff respirators	57
B56	Inspect aircraft for presence of chocks or moorings	55

TABLE A3
SUPERVISOR CLUSTER
(ST047)

TASK		PERCENT MEMBERS PERFORMING (N=118)
L515	Supervise military personnel	92
L449	Conduct self-inspections or self-assessments	92
L455	Counsel subordinates concerning personal matters	91
L498	Inspect personnel for compliance with military standards	89
L451	Conduct supervisory performance feedback sessions	87
L486	Evaluate personnel for compliance with performance standards	87
L452	Conduct safety inspections of equipment or facilities	85
L520	Write recommendations for awards or decorations	84
L448	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	83
L459	Determine or establish work assignments or priorities	82
L445	Assign personnel to work areas or duty positions	82
L518	Write performance reports or supervisory appraisals	81
L499	Interpret policies, directives, or procedures for subordinates	81
L476	Establish performance standards for subordinates	81
L453	Conduct supervisory orientations for newly assigned personnel	80
L502	Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	77
L487	Evaluate personnel for promotion, demotion, reclassification, or special awards	77
L489	Evaluate work schedules	77
L465	Develop or establish work schedules	75
L464	Develop or establish work methods or procedures	74
L457	Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace	73
L481	Evaluate job hazards or compliance with Air Force Occupational Safety and Health (AFOSH) program	71
L513	Schedule work assignments or priorities	68
L483	Evaluate job-related suggestions	67
L490	Evaluate workload requirements	66

TABLE A4
MISSION SUPPORT JOB
(ST107)

TASK		PERCENT MEMBERS PERFORMING (N=10)
O580	Coordinate supply-related matters with appropriate agencies	100
O587	Inventory equipment, tools, parts, or supplies	90
O594	Store equipment, tools, parts, or supplies, other than for mobility	90
O583	Identify and report equipment or supply problems	90
O586	Initiate requisitions for equipment, tools, parts, or supplies	90
O584	Initiate documentation to turn in excess or surplus property	90
O592	Maintain precision measurement equipment (PME) calibration schedules	80
O590	Maintain documentation on items requiring periodic inspections	80
O582	Evaluate serviceability of equipment, tools, parts, or supplies	80
O579	Coordinate maintenance of equipment with appropriate agencies	80
O591	Maintain organizational equipment or supply records	80
A6	Clean or lubricate handtools or special tools	70
A8	Clean work areas	70
O588	Issue or log turn-ins of equipment, tools, parts, or supplies	70
A16	Inspect test equipment	70
O593	Pick up or deliver equipment, tools, parts, or supplies	70
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	70
O589	Maintain benchstock parts or equipment levels	60
A7	Clean test equipment	60
K411	Access core automated maintenance system (CAMS) menus and data screens	60
O585	Initiate letters of justification for supply-related matters	50
O581	Develop equipment checklists	50
K438	Perform CAMS interface with base supply systems	50
L477	Establish procedures for accountability of equipment, tools, parts, or supplies	50
N576	Review technical order changes	50
N570	Maintain technical order libraries	40
A17	Issue or receive external fuel tanks	40

TABLE A5
QUALITY ASSURANCE JOB
(ST150)

TASK	PERCENT MEMBERS PERFORMING (N=7)
D144 Inspect installed aircraft defueling system components	100
D135 Inspect cavities	100
D139 Inspect external jettisonable fuel tank components	86
D145 Inspect installed crossfeed system components	86
D147 Inspect installed fuel quantity indicating system components	86
D146 Inspect installed engine-feed system components	86
D148 Inspect installed fuel transfer indicating system components	86
D151 Inspect installed pressurization system components	86
D152 Inspect installed receiver aircraft air refueling system components	86
D161 Inspect removed engine-feed system components	86
D162 Inspect removed fuel quantity indicating system components	86
D160 Inspect removed crossfeed system components	86
D159 Inspect removed aircraft defueling system components	86
D163 Inspect removed fuel transfer indicating system components	86
D167 Inspect removed receiver aircraft air refueling system components	86
D166 Inspect removed pressurization system components	86
D174 Inspect vent systems	86
D156 Inspect integral tanks	86
D138 Inspect external-fixed fuel tanks	86
D137 Inspect external-fixed fuel tank components	86
D173 Inspect vent system components	86
D170 Inspect removed transfer system components	86
L516 Write inspection reports	71
D140 Inspect external jettisonable fuel tanks, other than dash six inspections	71
D149 Inspect installed jettison or dump system components	71
D164 Inspect removed jettison or dump system components	71
D155 Inspect installed transfer system components	71
D143 Inspect fuel cells	71
L452 Conduct safety inspections of equipment or facilities	71
D157 Inspect nut plates	71
D171 Inspect replacement components prior to installation	71

TABLE A6
EXTERNAL TANK MAINTENANCE JOB
(ST135)

TASK		PERCENT MEMBERS PERFORMING (N=6)
A8	Clean work areas	100
A18	Maintain external fuel tank storage areas (tank farms)	100
A32	Prepare external jettisonable fuel tanks for tank farms	100
D179	Perform pressure checks on external jettisonable fuel tanks	100
D140	Inspect external jettisonable fuel tanks, other than dash six inspections	100
E204	Remove or install external tank nosecones or tailcones	100
E203	Remove or install external jettisonable fuel tank components	100
A17	Issue or receive external fuel tanks	100
A3	Check personnel for proper clothing or equipment, spark- or flame-producing devices, or removal of jewelry	100
K433	Open or close CAMS	100
K411	Access core automated maintenance system (CAMS) menus and data screens	100
A16	Inspect test equipment	100
D139	Inspect external jettisonable fuel tank components	83
E207	Remove or install externally mounted aircraft fuel quantity probes	83
B44	Bond equipment	83
K434	Perform CAMS inquiries for aircraft maintenance discrepancies, such as scheduled, deferred, or unscheduled	83
B66	Remove or install closure panels	83
D176	Perform dash six inspections on jettisonable fuel tanks	83
A30	Police open storage areas	83
B54	Drain fuel tanks or cells	83
A25	Operate maintenance dispatch vehicles	83
G285	Apply adhesion promoters prior to applying sealants	83
K436	Perform CAMS inquiries for uncompleted maintenance event listings	67
A7	Clean test equipment	67
B55	Ground equipment	67
E205	Remove or install external-fixed fuel tank components	67
A4	Clean external fuel tanks	67
B50	Depuddle fuel tanks or cells	67